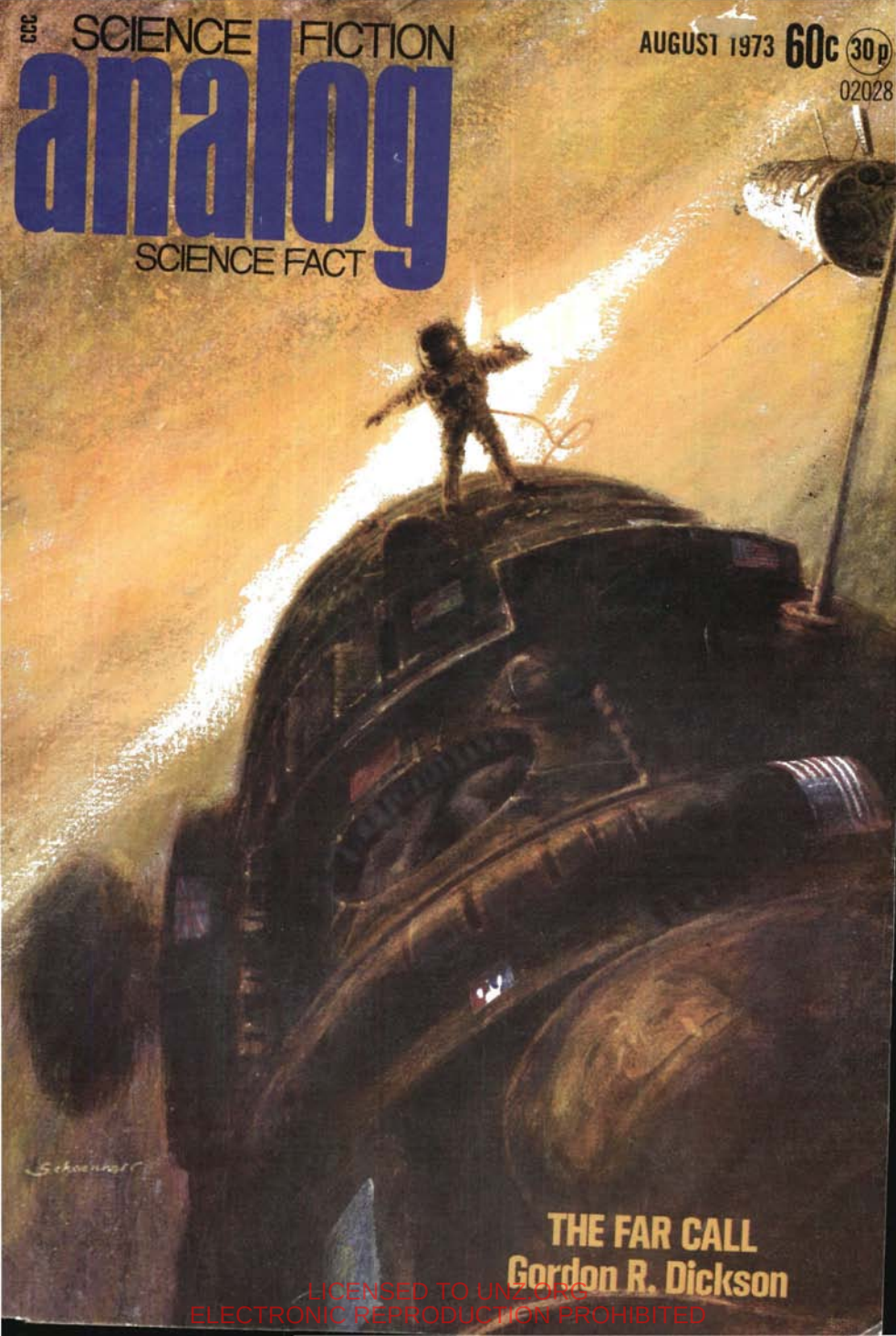

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Vol. XCI, No. 6 / AUGUST 1973

SERIAL

THE FAR CALL, Gordon R. Dickson 10
(Part One of Three Parts)

NOVELETTES

FORTY DAYS AND NIGHTS, Robert Chilson 78
THE EPOXY GOAT, David Lewis 112

SHORT STORIES

STIMULUS-REWARD SITUATION, Gene Fisher 65
THE SWEET SMELL OF THE PAST,
Lawrence A. Perkins 137
THE JUNGLE, Karl Hudgins 146

SCIENCE FACT

THE SYNCHRONISTIC BAROMETER,
Herbie Brennan 52

READER'S DEPARTMENTS

THE EDITOR'S PAGE 5
THE ANALYTICAL LABORATORY 111
IN TIMES TO COME 135
THE REFERENCE LIBRARY, P. Schuyler Miller 159
BRASS TACKS 165

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giant step backward

California is a land of contrasts. Stark desert lies next to balmy Riviera-like seashore. Sequoia forests and stony mountains are within easy distance of huge, smog-laden cities. The aerospace industry and the most productive astronomical observatories in the world sit amidst religious fundamentalists and sects of all descriptions.

And in the state-approved biology textbooks for elementary schools, the origin of man is illustrated by a photograph of Michelangelo's Sistine Chapel paintings.

The Sistine Chapel paintings, and the concepts that they illustrate, are powerful, beautiful, and deeply moving. But they are not biology, by any stretch of the imagination. The California Board of Education has bowed to the pressures of religious fundamentalists and other perhaps well-meaning people, and ordained that the Biblical explanation of man's origins, as given in Genesis, shall be taught in the schools as an hypothesis of equal validity with the evolutionary concepts of Charles Darwin and the biologists.

Quite frankly, this is nonsense.

Remember the Scopes Monkey Trial in Tennessee in 1925? Scopes lost. Although he had to pay only a nominal fine, and the anti-evolutionary law became a laughing matter, it wasn't until 1970 (!) that the last anti-evolution law in our fifty states was revoked.

Having lost the battle to prevent the teaching of evolution by legal strictures, the anti-evolutionists have reopened the battle with a subtler approach. They demand that the Genesis explanation for human origins be taught with equal weight as the teaching of evolution. To be logically consistent, they should also insist that the phlogiston theory of combustion, the caloric theory of heat, and the Ptolemaic description of the solar system be taught alongside their modern counterparts. No doubt the Flat Earth Society should have its in-

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nings, too. And to be fair, the fundamentalists of other religions should be allowed to get their stories into the biology texts. After all, once we admit the Genesis description, why not cover the whole picture and include the Buddhist, Taoist, Greco-Roman, Norse and all other mythologies? (Fortunately, Genesis covers three of the major world religions: Christianity, Islam, and Hebrew.)

I was raised a Roman Catholic, and exposed very early to the beauty and power of Genesis. But no theologian that I know seriously believes that this account, written several thousand years ago and based on even earlier oral tales, is literally true in the sense that the results of a laboratory experiment are verifiably true. Like all myths, the Genesis story was originally aimed at trying to explain the unexplainable. Today, such myths are important as illustrations of the moral principles by which we attempt to guide our lives. But they are not literally true: the events described in Genesis did not actually take place.

Thomas Aquinas knew that and so, I suspect, does Pope Paul VI. The Catholic Church has accepted evolutionary teaching much in the spirit that Darwin himself first offered it: as an attempt to show how God accomplished His work, not an attempt to overthrow religious belief.

Genesis is not "wrong" or useless. It is merely not biology. The philosophical, religious and historical information content of the Bible are not valid when it comes to teaching biology, any more than the same data are valid when it comes to treating tuberculosis or setting a broken bone.

And the overwhelming weight of evidence in favor of evolution makes me wonder how anyone can doubt the truth of the concept. For more than a century, fossils of early types of pre-human ancestors have been found and categorized. These stony remains of *Proconsul, Australopithecus, Homo erectus,* the Neanderthals and finally *Homo sapiens* show how we slowly evolved from smaller, less brainy creatures. We didn't "descend" or "ascend" from the apes: we evolved with them from common progenitors. The modern-day apes are our cousins, not our grandfathers.

The evidence of modern biology and genetics shows the mechanics of evolution, from Gregor Mendel's studies of heredity, using pea plants, to the molecular understandings of DNA and RNA.

While there are plenty of questions and arguments over the details of evolutionary theory, I know of no serious doubts in any scientist's mind that life on Earth evolved quite naturally out of inert chemicals, and that the human race is one result of this biological sequence.

Why do some people get upset

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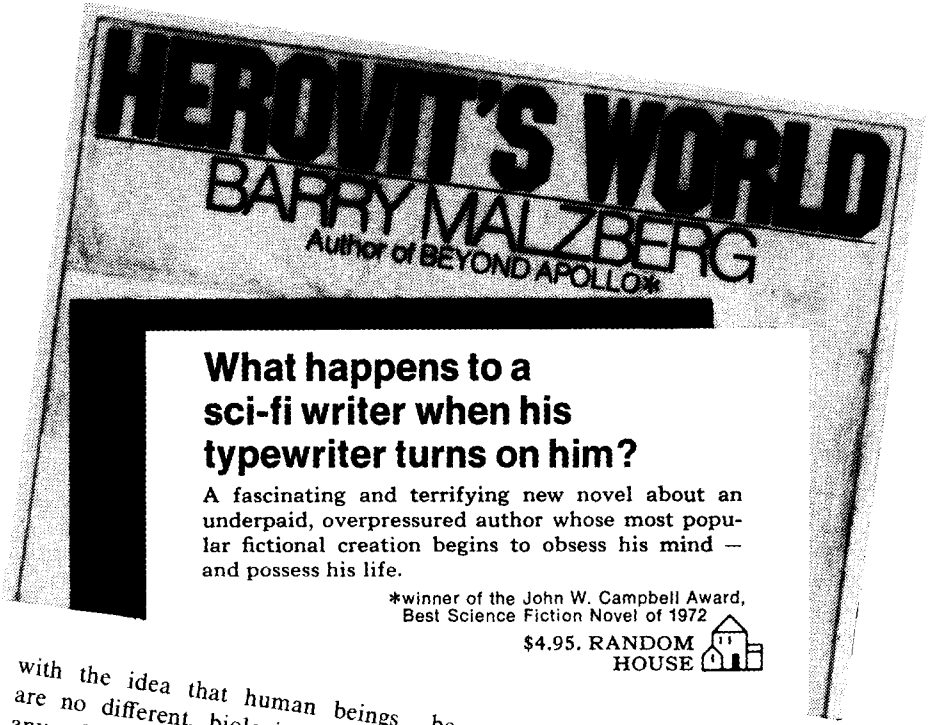
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with the idea that human beings are no different, biologically, than any other creature on this planet? In effect, what they are saying is that they want to think of themselves as separate from the rest of creation, "above" the other plants and animals, lord and master of the Earth and all its creatures.

This attitude is certainly not humble. It separates humankind from nature by allowing men to think of themselves as different and somehow better than everything else on Earth. This is the attitude that has led men to think of nature as something to be conquered and used, without caring about the consequences. It is an attitude that can be very useful for a small band of pioneers faced with an untamed and vast frontier. It is an attitude that can be very dangerous for a civilization that is experiencing a planet-wide population boom. It is an anti-ecology attitude that bulldozes apple orchards to make room for housing developments.

People are more important than trees. But in a very real sense, without the trees, without the life-support systems of spaceship Earth, the human race will either die away or migrate. And we're not quite ready to migrate.

The classic Judeo-Christian attitude, as it comes down to us today, is essentially "Man above nature."

Giant Step Backward

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Interestingly, the Eastern religions strive for a harmony of man with nature. Perhaps this accounts for their growing popularity around the world. On a planet where environmental problems abound, people are beginning to turn toward a system of belief that stresses ecological sanity.

In California, the question of teaching religious mythology in biology classes has been averted by a compromise that, I suspect, pleases no one. Evolution will be taught in the biology classes, and Genesis will be taught in history classes.

This year. But what will be the long-term effects of the fundamentalist attack on science? About one-third of the nation's textbooks are sold in California. Right now, the biology-text publishers are producing a special California edition that includes references to Biblical lore. What if the publishers decide (as publishers often do) that it will be cheaper to print *all* their books one way, and since California insists on including Genesis in its biology texts, the whole nation will get Genesis? What happens if and when the fundamentalists begin to attack in other states, on other subjects?

Man is an explanation-seeker. Many people—including, I suspect, the fundamentalists—find themselves in an incredibly complex society, a world that they can neither understand nor explain to themselves. Therefore they turn to religion for an order, a structure to the universe. The order and structure that science provides doesn't suit them, mainly because science is more difficult to understand, science admits that its answers are only approximations to truth and therefore apt to be changed at an instant's notice, and also because science does not place an all-wise, all-compassionate intelligence at the head of the universe.

Science tells us that the universe is understandable, even though we may never grasp the complete picture. But it is impersonal; there is no benevolent ruler making certain that everything comes out O.K. Most religions tell us that there is an absolute truth and they have it; this truth comes from God, who is personally interested in us, and wants to guide us toward eternal happiness.

And perhaps that's the *real* difference between science and religion: this question of what happens after death. The earliest known religious ceremonies were burials, where primitive hunting tribes—Neanderthal as well as *sapiens*—carefully placed a hunter's tools and weapons in the grave with him, so that he'd be prepared for a continued life. Today, people are beginning to preserve their bodies cryogenically, surrounded by the support systems of modern technology, in preparation for a literal life after death, right here on Earth.

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For millennia, religion has been offering a form of life after death. Today, science is beginning to offer the same thing.

But at heart, science has always remained silent on the question of an afterlife. Religion has always used the idea of an afterlife as a carrot and a stick. If you behave well in this life, you will be rewarded with heaven. If not, eternal hell awaits you.

Most modern people claim that they've rejected these ancient religious ideas. Yet the fundamentalists can influence textbook publishers. And the evidence here in the office of Analog shows that religious ideas are still very much a part of modern man's psyche.

Every week, writers send to Analog stories that "explain" the Creation, the life of Christ, the Flood and other Biblical events. They use science-fiction terms for their explanations: the Star of Bethlehem was actually an exploding interstellar spacecraft; Christ was an extraterrestrial visitor, and so on.

Some powerful stories have come from this. Arthur C. Clarke's "The Star" is the classic example. But there's a curious double twist in such stories. Essentially, the writer is saying that he wants to explain Biblical events in terms of modern science and technology, because he doesn't believe that the Bible prop-

continued on page 177

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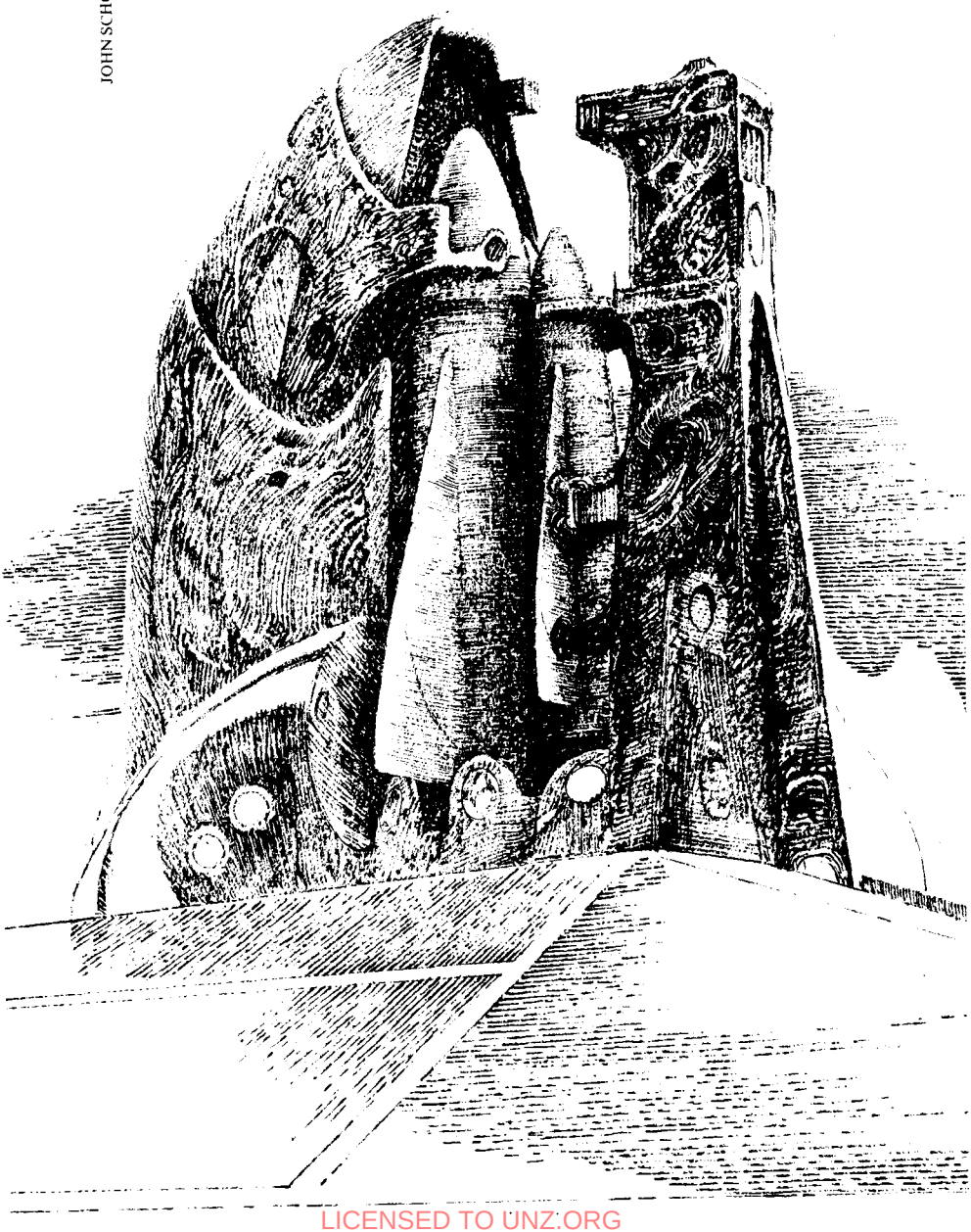

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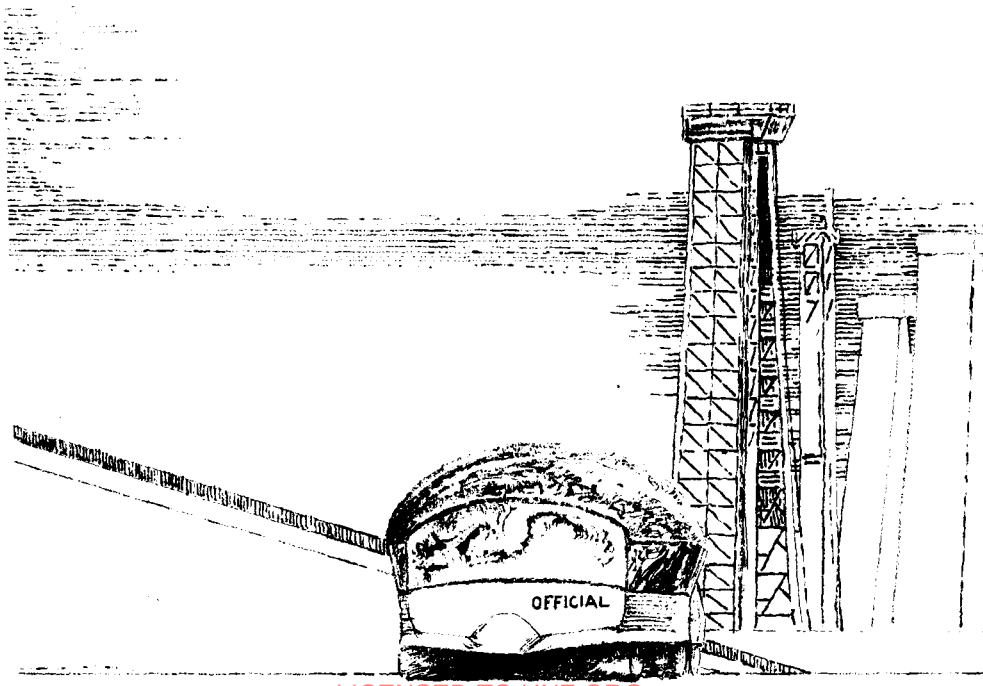
Gordon R. Dickson

the far call

Part One of Three Parts.
The exploration of space can only take place when the politics of Earth permit it. Which means that a manned mission to Mars can be endangered by political decisions.



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I

Outside the doors of the Operations and Checkout Building of the Cape Kennedy Space Center, the heat and light of the Florida midday struck at the six emerging diplomatic representatives with such unyielding natural force that it felt to U.S. Undersecretary Jen Wylie like walking into the solid face of a rock cliff.

"This way, this way . . ." repeated Bill Ward; the Mars Launch Director was impatiently beckoning them on.

Dazzled by the sunlight, the diplomats could hardly make out their large tour bus, back toward which Bill was now leading them. They crowded into its dimly seen, long shape, like a loaf of bread with its upper half all tinted glass coming down level with the floor of the interior. The self-adjusting, gray coloration of that glass was now so dark in response to the sunlight outside that only indistinct, dim shapes within hinted at seats, attendants and the driver. Crowding each other a little to escape from this blinding furnace of a day, back into a controlled and civilized environment, the five Deputy Ministers, and the one Undersecretary, for the International Development of Space, went one by one into the artificial blast of air from the open bus door and up three steps to the interior. Here, suddenly, everything was reasonable again. The nakedly white sun overhead and the stark contrast of light and shadow in the natural landscape were toned down by the adaptable gray tint of the glass to reasonable sources of original or reflected illumination. The renewal of coolness around them all was like a technological blessing.

Blinking against the sudden darkening of the light, Jen turned to the dim outline of a uniformed figure standing to his left, as he reached the top of the steps.

"Phones?" Jen asked.

"At the back, sir," the answer came. "To the left of the bar."

Jen turned down the length of the bus and went toward its rear, his vision adjusting as he went. The ordinary seats on this vehicle had been replaced with heavy lounge chairs that swiveled or slid about to the desires of their users. Most of his fellow diplomats had already seated themselves in these. At the back of the bus, seeing clearly now, Jen shook his head at the white-jacketed man behind the small, semicircular bar and stepped over to the row of three v-phones along the wall at his left. The polished surface of the wall gave him back his image—a thirtyish, tall, gangling body with a lean, bone-plain face above it.

He sat down in the first of these and punched the code for a distance call, the particular White House number he wanted. With the first button touched, a transparent

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sound baffle slid out from the side of the phone, encompassing himself and chair. With the last button a chime-tone sounded, but the v-screen before him retained its pearl-gray blankness.

"Scrambling," he said. He took his pocket scrambler from the inside pocket of his borrowed jacket and slipped it into the scrambler slot at the base of the phone. A different chime note sounded.

"Scrambling," said another voice from the screen; and a second later the pearl-gray dwindled suddenly to a dot and disappeared, to show a trim, middle-aged man in a neat gray office jacket, sitting at a desk. It was United States Presidential Press Secretary Warner Rethe.

"Hi, Jen," said Warner. "Something extraordinary come up?"

"Can I talk to the President?" Jen asked. "He told me to come directly to him, bypassing State Department in any special case."

Warner shook his head.

"I don't see how you can right now, Jen," Warner said. "He's on his way to Philadelphia for the William Penn Memorial Dedication. You'll see him tonight at his reception, as scheduled. But that's a touchy moment. He won't want to talk to you then."

"I see," said Jen.

"Yes. I'm sorry." Warner Rethe's oblong face under its balding middle-aged skull looked out at him from the three-dimensional depths of the holographic v-screen with intent interest. "Want to tell me about it?"

"I can," Jen answered. "But I'd rather talk to Himself. It's something calling for weight."

"As I say," said Warner, "I'm sorry. I don't quite know how I could get you through to him before tomorrow morning."

"But that's almost launch time. That'll be too late to change things."

"I'm sorry."

"All right, then," said Jen. "It's the Marsnauts. All of them, but my message was from our own man, Tad Hansard's upset. He says each country concerned has been fighting so hard for as many experiments of their own people as possible, to be included in the flight plan, that the experiment load's too heavy now. It's so heavy it could be a danger to the mission."

"Well, that sort of infighting's to be expected," said Warner.

"Tad says it's got to the point where the mission as a whole's in danger," Jen said. "He told me so just now, at the lunch the Marsnauts just gave us all, at the Operations and Checkout Building."

"In what way—dangerous?" Warner's tone was instinctively cautious.

"The experiments are the icing on the cake, Tad says." Jen had the feeling that he was pushing against a door already closed, and a little desperation leaked into his voice in

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spite of his determination to be calm. "The important thing is to get to Mars, and back, safely. If the 'nauts start having to put the experiments to be done along the way ahead of that, it may mean bad trouble up there."

"I see," said Warner. He hesitated for a second. "Well, I suppose he knows what he's talking about. You should tell him, though, we've no control over the actions of the representatives of other countries—either their Marsnauts or their Deputy Ministers."

"He knows that."

There was a second of silence.

"Yes," Warner said. "Well, then—I don't really see what else can be done."

Jen let a little of his anger out.

"You know damn well what can be done!" he said. "And who can do it!"

"Hm-m-m," said Warner thoughtfully. "It's not for me to say, of course—"

"Cut it out, Warn! We're scrambled, aren't we? This is Jen! Remember me from my days in the press corps?"

"Not for me to say," repeated Warner, unchangingly. "What looks simple from a narrow view isn't always so from the whole spectrum. And a chief executive has to think in terms of the full spectrum, all the time. Sometimes a word can be said at the right moment to get results. Sometimes . . . it simply isn't the moment to say the word."

"Warn," said Jen, grimly, "I want to talk to the President before tomorrow morning. That's an official request from me, as our Undersecretary of Science for the Development of Space, to our Chief Executive."

"Right," said Warner, calmly. "Of course. I'll get on it right away and do the best I can."

Jen sagged in his chair.

"Warn," he said. "For God's sake, Warn! It's the future of six nations—of the whole world—bound up in the success of this supposedly cooperative mission!"

"You know I appreciate that, Jen. So does the President," said Warner. "Make sure the VIP Message Center can locate you at any time. I'll call you just as soon as I have some kind of word. Good-bye."

Warner's picture disintegrated into a crazy quilt of color which swirled away like water down a drain to a single bright dot in the center of the screen; and left the screen pearl-gray, quiescent.

"Good-bye," said Jen emptily, to the empty surface before him.

He pulled his own scrambler, put it in his jacket pocket and went back to a seat on the bus.

It had risen on its air cushion some moments since; and was sliding along the asphalt roadpath in the direction of the shuttle launch site. He sat down in one of the three heavy lounge chairs that had

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been pulled together to form a group. Occupying the chair beside him was Bill Ward, listening with brisk, controlled patience to the Russian Deputy Minister for the Development of Space, Sergei Varisov.

". . . your brother," Varisov was saying. "A doctor of veterinary medicine, I understand?"

"Yes," Bill Ward said, "he's on the faculty at the University of Minnesota Veterinary School—"

He broke off, standing up as the bus slid imperceptibly to a halt.

"Excuse me," he said to Varisov, and turned to raise his voice so that it could be heard through the whole of the bus. "I'm afraid this is as close as we can come right now to the shuttlecraft because the area has to be kept clear for last minute checking and the pre-fueling operations. However, we're close enough so that you can get a good look."

They were, indeed, quite close. It was the opposite side of the bus that faced the launch pad on which the shuttlecraft stood upright, but the bus itself was so sparsely passengered that Jen could see between the opposite lounge chairs clearly without needing to stand up or move.

The bus had halted at the foot of the ramp leading up to the launch platform holding the shuttlecraft. It was not, of course, simply a smooth, upright, three-stage, space-going vehicle as the Saturn rockets had been. Awaiting launch, it rested, as they had done, in vertical position; but unlike them, it looked like one heavy-bodied small aircraft glued to the back of its identical big brother. The mobile launch structure alongside held both sky-pointing vehicles in a spidery embrace.

"The orbiter will ride piggyback on the booster," Bill Ward was lecturing the Deputy Ministers, "to about two hundred thousand feet. By this time we're about three minutes past lift-off. Then separation occurs—"

Someone broke in with a question. His mind still occupied with a confusion of ideas about Tad Hansard's concern and his own thoughts about shark-remora partnerships, Jen only belatedly recognized the thick voice of the German Deputy Minister for the Development of Space and lost the sense of the question entirely.

"No, the booster lands like any other aircraft—slides in, actually, on its belly skids," Bill Ward was answering. "Just the same way the orbiter itself does, when it comes back. Both are piloted. Meanwhile, after it separates from the booster, the orbiter proceeds to climb into the parking orbit of the space station . . ."

Staring out through the light-reducing glass bubble that covered the top half of the bus, Jen felt a strange disbelief. Here, at only a couple of hundred yards from the launch pad, the two parts of the

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shuttlecraft loomed impossibly large. There was something about them like the eye-tricking size of the huge Vehicle Assembly Building the diplomats had been taken through before lunch. All these structures and machines were too big to be real, too titanic not to be a mock-up by some movie-maker whose only aim was to awe the audience with his film.

Man had gotten out of scale, somehow, with earthside reality. But on the other hand how far was Mars—how far, really? How far in fact *was* thirty-six million miles, when the Vehicle Assembly Building was only three miles away, when downtown Cocoa Beach was only seventeen miles away? How deep was the ocean of nothingness that was space? Jen shivered, thinking of infinity.

". . . we've just finished mating the orbiter to the booster," Bill Ward was saying. "The pre-launch checkout has been going on for some time, a matter of checking innumerable little details . . ."

. . . *With our own few planets swimming in their orbits, around the many-times greater sun—and this sun a small light lost among far greater suns* . . .

Jen felt a firm grip on his forearm; and saw the face of Varisov only a few inches away, looking at him with concern on the round, aging features. He realized suddenly that he was a little dizzy, that he must have been swaying.

"Are you all right?" Varisov was asking, in a remarkably gentle voice. "You aren't ill?"

"Ill? No!" Jen pulled himself upright, laughing a little. "Tired . . . that's all."

"Oh, yes. Yes," said Varisov, letting go of his arm. "It is always tiring, this sort of thing."

Bill Ward finished speaking and sat down again in the chair from which he had risen earlier. Varisov turned almost eagerly to him.

"Your brother, you were saying," Varisov said, "is on the faculty of the School of Veterinary Medicine, at this university?"

"Joel—oh yes," said Bill. "Yes, the last six years."

"I wonder," Varisov said. "Do you know if he's been involved in any work or research on nerve degeneration in animals? I have a dog at home, a small dog—"

"Afraid I don't know anything about that," said Bill. "He doesn't usually tell me much about what he's doing."

"It's not important, of course," said Varisov. "I hardly see the dog, these days. But to my wife—we only had two children, adult some time since, of course. The older, the boy, was a test pilot. In fact Piotr and Feodor Asturnov, our cosmonaut on this flight, were test pilots together. Not that they were close, you understand, but they knew each other. Unfortunately Piotr's—a plane my son was testing came apart in the air and he was

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not able to get out in time."

"Oh. Sorry," said Bill, restlessly and uncomfortably, sitting stiffly upright in his seat.

"And his sister, our daughter, is married and lives in New Stalingrad, one of the new towns of Siberia. My wife, so, and this dog—we call him Zechi—are alone most of the time, together; I have to be away so much. Zechi means a great deal to her."

"Ah . . . yes," said Bill, glancing past the Russian's head at the road still separating them from the landing space where the VTOL—Vertical Takeoff and Landing—aircraft waited to take the Deputy Ministers back to their hotel on Merritt Island.

"Zechi's hind legs, lately, have been failing him—he's not a young dog. Ten, twelve years old, I think. Yes," said Varisov, "twelve years old. When he was young, he was hit by a truck; but he seemed to recover very well. It's only this last year it's become harder and harder for him to walk."

"That's too bad," said Bill Ward. "That's a shame. You've had a veterinarian look at him before this?"

"Oh, of course," said Varisov. "But—so little seems to be known about dogs, in this way. They tell us Zechi is just getting old; and we're not veterinarians ourselves. We can't argue. But Zechi got along so well with those back legs all those years . . . I thought, perhaps, if someone over here was looking into nerve troubles, or whatever causes paralysis like this, in dogs . . . your brother might have heard of something . . . ?"

The fingers of Bill Ward's left hand drummed momentarily on the arm of his chair.

"I can drop him a line. Be glad to," he said.

"Would you?" said Varisov. "I would appreciate it greatly."

The bus pulled up at last at the landing area; and the VTOL plane waiting there took them into its interior, which was hardly less spacious than that of the bus. A moment later, the plane lifted smoothly, elevator-fashion, to about five hundred feet and flew them in to the landing area on top of the Merritt Island hotel that had been taken over by the government for VIP quarters.

Jen Wylie went gratefully to his suite to lie down. But Varisov, as he was heading for his own suite on the floor just below the landing area on the roof, was checked by the Indian Deputy Minister, Ambedkar, and Guenther, their Pan-European opposite number, as he passed through the central lounge area leading to their suites.

II

"Sergei, have you a minute? Stop and have a drink with us," Walther Guenther called in Russian as Varisov started off toward his own hotel suite.

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The Pan-European's command of the language was fluent enough, but obviously required some effort. Varisov turned and went to join the other two, answering in much more capable German.

"Thanks," he said. "That's a pleasant invitation, now that we're off duty for an hour or two." He seated himself in one of the heavy, overstuffed green armchairs by a circular table of the lounge area, in this particular hotel floor which had been set aside for the Deputy Ministers. "I believe we're free until the American President's reception at eight?"

"I believe, nine p.m." said Arhi Ambedkar, the Indian Deputy Minister. "There has been some delay in making the arrival of U.S. President Fanzone in time. The official hour of the reception remains, but we are quietly informed to consider nine our hour of beginning."

It was immediately apparent that Ambedkar's German was as effortful as Guenther's Russian. Varisov switched again—this time to French.

"I didn't know that," he said.

"We just heard it," said Ambedkar in excellent French and obvious relief.

"Yes," said Guenther easily in French himself, "the pilot of the copter that will take us there was just now telling us. What will you have. Sergei?"

"Cognac," said Varisov, "since we've ended up where we have."

The other two smiled. *They are really old men,* thought Varisov, studying the brown, round face and the reddish, square one before him while Guenther spoke into the telephone grid on the table beside him, and ordered. *I spend most of my time dealing with old men—men my age—and I forget that most of the world is younger. The world is run by old men—necessarily, of course.*

"It's a relief to sit back and relax," said Guenther, after the order was in. "By the way, I'm a little surprised, I thought Fanzone would have showed up down here before this."

"He's somewhat above our class, of course," said Ambedkar.

"Politically, yes," said Guenther. The cognac was brought in by the young noncommissioned officer in the U.S. Air Force that served the lounge; and the conversation hesitated until he was gone again.

"Politically, yes," said Guenther again. "The Chief Executive of a nation like this; and we only Deputy Ministers for the Development of Space." He smiled. The others smiled. "We won't talk about political antecedents, our own—or his."

Varisov chuckled politely. But Ambedkar looked interested.

"There is, indeed, then," he asked, "some truth to this noise about underworld support having helped him gain the Presidency of the U.S.?"

Guenther waved a large hand.

"No, no. I hardly think so,

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really," he said. "Not that it's important. They are all half-gangsters at heart, these Americans. But they never let that stand in the way of business."

"You might say," agreed Varisov, sampling the cognac, which had been brought, sensibly, in a snifter glass, "that the U.S. is such a fat dog it doesn't really mind a few fleas. It would feel lonesome without its gangster element."

"But," said Ambedkar, "if gangsterism should be a factor in their political considerations—particularly in regard to this international mission . . ."

"I think we can ignore anything so minor," said Guenther. "It's the obvious elements in Fanzone's thinking that are worthy of concern. The private agreement was that he would not be here for the actual launch, so as not to disturb the balance of unity at that time. Now, an accident makes him late for his reception the night before. I merely wonder if another accident might not delay him here until the shuttle actually takes off?"

"There would be repercussions," said Ambedkar.

"Of course," said Guenther. "But their impact would be lost in the general enthusiasm of the beginning of the flight. We can't be sure he's staying until he does, by which time it'd be too late. We'd have an accomplished fact to deal with."

"We could express our concern over the possibility of something like that happening, before it did," said Ambedkar.

"That might rather put us on the defensive in later dealings about the mission if he did not stay," said Guenther. "A problem."

He looked at Varisov.

"What do you think, Sergei?"

"There's always cause for concern," said Varisov, "particularly when dealing with the American mind. Of all such capitalist organs—no offense, my friends—the American mind is the most self-centered and therefore the most unpredictable. But I can't believe even an American President would risk his country's image by obviously shouldering the representatives of other nations aside in that fashion."

"But we should talk about the possibility," said Guenther.

"Oh yes," said Varisov. "By all means we should talk about it . . ."

In his own suite, down the hall from the lounge area, Jen was once more speaking to Warner Rethe over a scrambled circuit.

"The point is," Jen was saying patiently, "can I see him when he comes in for the reception, tonight?"

"Not a chance," said Warner. "This is strictly a stage appearance, you ought to know that. The last thing a President can do in a case like this is give the press an excuse to show him being partisan toward

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you or Tad Hansard. Damn it, Jen, he's leaning over backward just to avoid any appearance like that. A newspaperman like you ought to understand the angles."

"Look," said Jen, "this does concern everybody on the mission, all the countries, every 'naut—not just Tad. Tad knows the work schedule's too heavy with tests, particularly on the outgoing leg—"

"There's a reason for that; and you know it as well as I do," said Warner. "The mission's going to be at its biggest as news during the first few weeks. That's when we want the 'nauts reporting they've just done this experiment that Hamamuri of Nagasaki wanted done, and that experiment for Muller at Bonn University, and so on . . ."

"All right. All right," said Jen, keeping his voice down. "But the point is, there's too much. There's not enough reserve time left. Tad's point is, what if they get up there and have to skip some of the experiments, or some of the tests get bungled because they're trying to work too fast? All he wants is for the President to drop a word to the Deputy Ministers of the other countries, here—and this late, he's the only one who can do it—so that everybody concerned agrees to cut their list by one experiment, or two. There's more potential dynamite in letting them go off this way, than there is in facing the thing now."

"That's only Tad's opinion," Warner said. "Besides, if he's so sure that's the case, why can't he just handle the paring down of the experiment list once they're on their way?"

"Man!" said Jen, staring into the screen with Warner's face printed on it. "Oh, man! When you want a scapegoat you don't fool around, do you? You just shout out his name, rank, and serial number and wait for him to take three paces forward. Tad's a Marsnaut. They're all Marsnauts—not politicians!"

Warner stared back at Jen from the screen without speaking for several seconds. When he did speak, it was as if he had stepped back a couple of paces.

"We've all got our job to do, Jen," he said. "Including me. I'll tell you what. I'll talk to the President. That's all I'll promise you. I'll pass the word along to him. But don't expect anything."

"No," said Jen.

"All right, then. Unscramble." Warner broke the circuit.

Jen sat back in the chair beside his bed, slumping. He felt like someone who had just been punched in the stomach, drained of strength and a little sick. The phone buzzed again. He punched it automatically to *on*; and a woman's face appeared in the screen.

"Hi!" it said, affectionately, "if you'd stay off your phone for five minutes, maybe somebody could call in!"

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A warm gush of pleasure wiped out the punched feeling.

"Lin!" he said, happily. "Where are you?"

"Here. Downstairs, that is," Alinde West said. "I was going to come up and just knock on your door; but evidently you've got security guards around you, five ranks deep. I told one of them I was your common-law wife; but it didn't move him. He's watching me now while I phone you from the lobby."

"Who is it?" Jen asked. "Gervais? Tall, black man, middle-aged?"

"With a scowl."

"Let me talk to him."

There was a short pause; and then the face of Security Department Agent N. Gervais took over the screen.

"Sorry if I've been holding up someone I shouldn't," Gervais said. He did not look sorry at all. "She said something about being your wife; and according to our records you're not married."

"Not exactly, no," said Jen. "She's a very old friend, though; and she's had White House clearance to accompany me before. If you put a call in to Warner Rethe's office, you ought to find authorization for her to join me."

"Just a minute, Mr. Wylie." The screen went blank—but not gray-blank, white-blank with a holding light. Wylie sat waiting for several minutes, thinking that Gervais could at least have put Lin back on while the check was being made. Then Gervais himself appeared again. "Yes sir. There's White House record of clearance for her. It's been reactivated on a twenty-four-hour basis. If you want it extended beyond that time, they ask that you call them."

"Thanks," said Jen. He felt a sudden sympathy with Gervais, who was a professional. Lin's visit was a complication to Gervais—a needless complication and increase in the duties of guarding the international representatives attending the launch. "I promise she'll go directly to my suite up here and directly from it. And I'll let you know as soon as she leaves the area."

"Thank you, Mr. Wylie," said Gervais, with no more emotion than he had shown before. "I'll have her escorted to you, now."

One of the agents, a man Jen did not know, brought Lin to the suite. As the door closed behind her, he had his arms already around her. She was good to hold; a tall, chestnut-haired, vibrant woman-shape.

"What are you doing here, anyway?" Jen asked her, as he was making them each a Scotch and soda after they had sorted themselves out.

"The magazine sent me down," she said from the couch where she had seated herself. "My suggestion, of course. I'm going to do a piece on the Marsnauts' wives—how they

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adjust their families to the idea that daddy's going to be gone three years in outer space."

"There's not a lot of wives for you to ask," said Jen. "Feodor Asturnov, the Russian cosmonaut, is a widower. Both Anoshi Wantanabe and the Pan-European 'naut, Bern Callieux, have wives who decided to stay home with their children and not come for the launch. Bapti Lal Bose, the Indian, isn't married. That just leaves Dirk's wife and Tadell Hansard's."

"You've met them, haven't you?" Lin asked. "The wives of those two, I mean?"

Jen nodded.

"You'll like Wendy Hansard I think," he said. "She looks something like you. She's the sort of woman you'd kind of expect an astronaut to marry. Dirk's wife, Ceilly, I don't know as well. But she seems likable, too. Big, young girl. Sort of more English than Dirk. Blond."

Lin tossed her own long brown hair.

"Can you help me get to see them tomorrow?" she asked.

"I can try. You shouldn't have any trouble once the launch is over. Before, there's no chance, of course. Look—" He came over with the drinks, put them on the table before the couch and sat down, turning urgently to her, "there's a Presidential reception for all of us to go to this evening; and it's not the sort of thing where I can get you on the invitation list. But if you think you can wait here, I ought to be back here about eleven—"

"Idiot!" she said, putting her arms around him fondly and nestling up against him. "Of course I'll be here when you get back—waiting. Why do you think I managed to get myself sent down here?"

Later, Marsnauts and their personal guests went from Operations and Checkout by VTOL aircraft to the landing pad on the roof of the hotel housing the Deputy Ministers. The Reception was held in a private dining room on the ninth floor; and with security guards manning the elevators, they were taken down to it. The Deputy Ministers were already there; and Paul Fanzone, the United States President, was less than ten minutes later in arriving. Jen caught the eye of Warner as the press secretary entered the reception room a few steps behind the stocky, dark-skinned figure of the President. Warner shook his head, briefly.

Jen felt cold. If the shake of Warn's head meant that the President had turned him down without excuse or explanation . . . for a crazy second he toyed with the idea of turning in his resignation. Then he recovered into common sense. Far from resigning, he knew that he would fight to hold on to this job if anyone tried to take it away

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from him. He had no need for anyone to remind him that as a newsman-turned-diplomat he was a paper tiger, but the Mars mission was representational of everything in which he had ever believed, and he wanted to be part of it.

But the reception had gone tinny and hollow on him. He had skipped dinner in order to spend the time with Lin; and that had been real and solid enough. But now, with a glass of champagne in him that had gone directly from his empty stomach to his head, he was back on the quicksand of politics again. Standing with his refilled glass in a corner of the reception room, he had a moment's disorientation in which all the other people present seemed to be going through some sort of ritual dance, making expected gestures, speaking expected commonplaces, and murmuring expected replies.

In the midst of all this, however, he caught sight of Wendy and Tad Hansard. As he had said to Lin, she and Wendy were alike, physically; and the sight of Wendy was almost like an anchor in reality. Returning from his momentary excursion into bitterness, he was struck with an idea. He moved across the room and found a second to speak quietly in the ear of Tad.

"Got a second?"

Tad, still smiling at the wife of the Air Force general to whom he and Wendy had been talking, turned casually so that he faced Jen. Together they took a step aside from the others.

"What is it?" Tad asked.

"I haven't had any luck getting through to Fanzone about the experiment schedule," Jen said. "Why don't you have a shot at getting him alone, yourself?"

Tad smiled bleakly.

"I don't know how to talk to Presidents," he said in his soft, southern voice. "How do you do it?"

"The same way you talk to anyone else."

"All right," said Tad. "But I don't hope for anything. I never made the debating society back in high school or college."

"It isn't a debate," said Jen. "You know your business. You're the astronaut, the Marsnaut—the man who knows. Just tell it like it is—to the President."

"I've got nothing to lose," said Tad. "So I'll try it. But I got a hunch it ain't a-gonna work." His tone was light, but the skin around his eyes was drawn tight.

He turned back to the general's wife and Wendy. Jen faded away until he found another conversational group, this one with Warner Rethe in it. He stuck with the group, hoping to get a second with Warn, alone. But when the conversation dwindled down to a four-headed matter, Warner excused himself and moved away so abruptly that Jen could not follow

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without making it obvious he was doing just that.

He kept his eye on Warn after that, and made a couple of further attempts to get close to the man. But it became more than obvious that Warn was determined not to be caught with him in any conversational group where Jen could ask him about the President. However, later he caught a glimpse of Fanzone and Tad, momentarily alone. Tad was speaking and the President was listening and nodding.

The reception ended at ten-thirty with a cold buffet supper. Jen found himself eating like a starving man; which, he suddenly decided, he was. With food inside him, optimism and courage returned at once. He was turning over in his head several wild ideas of insisting on talking to Fanzone before the President left, when he felt a tap on his elbow. He turned around, still holding his fork and plate, to look directly into the face of Warn.

"If you'll step into the back room over there without attracting attention," Warn said, "he'll talk to you after everyone else has gone—for a few minutes."

Warn turned away without waiting for an answer. Jen stood, mechanically cleaning up the food that was left on his plate, feeling a fierce determination and hope lift in him. Fanzone had been nodding when he talked to Tad. Perhaps Tad had gotten through to him; and this decision to talk to Jen was to get corroboration of what Tad had said. The point might be gained, after all.

Jen did as Warn had said. Twenty minutes later the last of the voices from the reception room dwindled into silence. A moment later Paul Fanzone, followed by Warn, strode into the attached bedroom where Jen had been waiting, sitting in the room's one armchair. Warn carefully closed the door behind them; and Jen scrambled to his feet.

Fanzone, however, ignored the armchair. He stayed on his feet, halting in the center of the room, as Jen came up to him.

"It's good of you to see me, Mr. President," Jen said. "I can't tell you—"

"Don't thank me," said Fanzone. "You've got nothing to thank me for." The swarthiness of his skin, which masked the signs of tiredness well enough from the television cameras, did not hide them in this softly-lighted room as he stood in the flesh a few feet from Jen. Fanzone's face had sagged slightly even in the six months since Jen had been a temporary press secretary for him. There were little heavinesses of flesh at the corners of his mouth and under his eyes. Almost as tall as Jen, he now seemed shorter than he had been, and his football-player's shoulders were rounded and humped, making him seem brief of neck and turtle-like in stance. For a man in his early

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fifties, he still looked good; but not as good as he had six months ago.

Jen gazed at him with an odd feeling of mingled respect and sympathy. Because of Fanzone's long friendship with Jen's father, he had known this man who was now President since he himself had been thirteen years old. There was no one Jen admired more. The elder Wylie had become a state governor and then a U.S. senator; but with the money and family behind him to give him almost anything he wanted. Fanzone had made it from nowhere to his present office solely on faith in himself and in what he wanted to do.

"The President," said Warn, who had come up from the closed door to join them, moving silently over the rug of the room, "only has about five minutes, Jen. This visit was supposed to be purely social."

"He understands that, Warn," said Fanzone. He spoke abruptly to Jen. "You're supposed to be my alter-ego down here, do you remember that?"

"Yes, sir," said Jen. "But this—"

"No buts. You're standing in for me," Fanzone said. "That means you're supposed to say my words and think my thoughts. You're not some independent liaison between me and the 'nauts."

"I realize that too, sir," said Jen. "But the Mars mission itself is important to the United States; and I thought you'd want—"

He was interrupted by Fanzone's weary exhalation of breath. The President walked around him and sat down in the armchair, motioning Jen to a seat on the edge of the bed, facing the chair. Jen sat down.

"Look, Jen," said Fanzone, leaning forward in the chair. "You're not a diplomat. You're not a politician. I could have had my pick of either to put in your shoes down here. You notice all the other nations sent experienced diplomats as their Deputy Ministers. Don't you know why I picked an amateur, an ex-newspaperman?"

"I understood it was because you wanted someone who knew the press and could work with it—"

"All right; that, too," said Fanzone. "But that was a bonus. The main reason was to put a representative of mine among the Deputy Ministers who was obviously someone none of the others needed to worry about."

He looked at Jen for a minute.

"If that information bothers you," he went on, "it shouldn't. I'm not suggesting you're not capable. I'm just saying you're an amateur among professionals—put there deliberately so that the professionals will know they don't need to compete with you—or me."

"I see," said Jen. "Well, I knew that. I'm not upset, sir."

"I expected you to stumble over your feet here a little," Fanzone went on. "In fact, I wanted you to; just to reassure people like Mayence and Varisov that you weren't

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a wolf in sheep's clothing. I wanted them to be sure they had a U.S. President who would be absent from the scene; and a U.S. Undersecretary who was obviously no match for them. Do you know why I wanted that?"

"No," said Jen. "That I don't know."

"That's right. You don't know; and the reason you don't is because you're from our own country," said Fanzone. "You take everything that's American about this mission for granted, as a natural right. If you were from Europe or Russia, or any one of the other countries involved here, you'd understand in a second. More than any of the other world communities contributing to this mission, the U.S. has to lean over backward."

"I don't understand that, sir," said Jen. "I really don't. Why us, in particular?"

"Because we've got too big a slice of the mission, already," Fanzone said.

"I thought that was all settled months ago," Jen said. "I thought we, and all the other governments, horsetraded until there was no one country that could claim its part was more important than the rest. Here we are, calling them 'Marsnauts' instead of 'astronauts', which is our own word for them; a Russian is co-captain with Tad Hansard; and every country's getting the same amount of test equipment on board and experiment time during the mission . . ."

"Those are details," Fanzone said. "Face-saving details. The kind of things that work in the newspapers and newscasts. The real facts still are that we've got the big slice of the mission, simply because there was no other way to have it. Only the Russians had a space program comparable to ours; and they've been concentrating on other areas of spaceflight than the miniaturization of equipment. At this point in time, it was only by using our particular equipment and techniques that we could squeeze six nations' worth of wants into a pair of ships on a three-year trip to Mars."

He stared at Jen.

"You understand? It's all linked together. Our techniques—therefore our space hardware—therefore our bases, like Kennedy, here. No matter how you divvy up what's left over after that, the U.S. has the lion's share of the trip in that much alone."

"The other nations went along with that situation," said Jen.

"That's right," said Fanzone, grimly. "And the reason they went along with it is the very reason you're barking up the wrong tree with your complaints about the number of experiments to be run in the first few weeks of the mission. The others went along with it, not for Mars, but for political reasons right here on Earth. You may have gotten your eyes full of stars

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while you've been down here, Jen, so that you didn't realize that. But you'd better get it straight now—it isn't the mission that's the main thing at stake here, it's international politics; and the mission is just another arena where those politics can be worked."

Jen looked straight at the older man.

"For us, too?" Jen asked.

Fanzone stared back. As the dark eyes met his own, Jen realized suddenly that the other was boiling inside—and that this was not showing in his speech only because it was not his way to swear at the hired help.

"Try to understand something," Fanzone said. "This isn't the politics of the newspaper cartoon, or the election speeches or the musical stage. This is the machinery created by human beings so that communities and cities and nations could work together for everybody's survival. Do you think I don't know how much space means, or that the heads of the other governments don't? Don't you think I know we need to get out where we can do things like study the sun and come up with fusion power before a new Dark Age sets in? But we don't just deal with sensible, completely informed people. We deal with the man who won't believe there's an energy crisis until his lights go out and he can't buy gas for his car. We deal with the woman who isn't interested in pollution until the food she buys poisons her children—or she goes to the supermarket and there's nothing there for her to buy at all. These are the people who dig their heels in and won't support doing anything right up to the moment when the trouble becomes personal. Then, they turn right around a hundred and eighty degrees and want to shoot whoever was responsible for nothing being done."

Jen said nothing. Fanzone looked at him for a long moment, as if waiting, then went on.

"Jen," he said, "do you remember the history of the space program? It was born out of a competition with Russia to see which nation landed on the Moon first. It nearly died in the Seventies when all it had to justify itself were the actual, real, hard fallout of benefits from its basic research. What brought it back to life the way it is now, was its new symbolism as the spirit of cooperation between nations—to a better future for the common benefit. Getting to Mars won't butter anyone's bread, immediately; but the prospect of friendship and cooperation between the large nations and a cutback on defense costs will butter a lot. You understand that much, don't you?"

"Yes, sir," said Jen.

"Then understand the rest of it," Fanzone said. "The development of space has been as much my dream as anyone's. If we could have handpicked the time of this launch,

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politically things might have been easier. But a launch window like this where Earth, Mars and Venus will be all lined up for the mission comes only when the planets make it available. We—all of us in the governments concerned—have had to play our cards as they lay. And in that game, the U.S. isn't the only one holding a high hand."

"I realize that, sir," said Jen.

"But do you, really, in your bones where it counts?" demanded Fanzone. "To say the phrases is one thing, to understand what they mean, something else. Russia's power reserves in fossil fuels alone have her in strong position for the next twenty years—just at a time when our own power crisis is putting us in a straightjacket. Britain's being overloaded with obsolete industrial machinery has turned out to be a plus for her—she can retool in a jump to a laser technology in her industries at a fraction of what it'll cost us to convert. Pan-Europe just now holds the balance of power in the economic market, simply by accident of geographical position and its huge, new purchasing power; and India, like China, is a coming giant of the Twenty-first Century. These are just interesting statements to you and other people, Jen; but for me, they're the specific facts of life I deal with. And I *am* dealing with them—moving toward an overall world community that'll be many times closer-knit than the present one, a community in which international social involvement has to follow inevitably behind the economic cooperation of nations, and economic cooperation has no choice but to develop out of present political détentes. Political détentes built on things as fragile as the popular appeal of this Mars mission to the people of half the world."

He stopped and stared at Jen.

"So," he said, more slowly, "whether you understand or not, these things are what count at the moment. I've just begun to do the job in international politics that I pledged myself to do. I can and will get it done; but it's the overall job that is going to have to come first—before anything else. That's why the Mars mission crews are simply going to have to try to make it with more experiments than they ought to be carrying. That's why I've kept, and will go on keeping, personally out of the whole political end of the mission as much as possible, throwing an amateur like you in with experienced old political infighters like Sir Geoffrey Mayence and Varisov."

He paused. After a second, he spoke again, more gently.

"Varisov, Guenther, Mayence," he said, "or any one of them, could make this suggestion of yours to their governments, and there'd be some chance their governments would speak up. But it'd have to be one of them who promotes it,

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not us. Have you tried talking to some of your fellow politicos?"

"No," said Jen, "but Tad told me he asked the other 'nauts to talk to their Deputy Ministers about there being too many experiments scheduled. They did and all got a flat *no* to any change."

"Well," said Fanzone, tiredly. He got to his feet. "That should have shown you and Tad how the wind blew. All right, Jen. You understand now, I hope, why I'm no help to you. But even if you don't understand, it doesn't make any difference. The mission is going off the way it's been laid out to go, regardless. Several billion people all around the world don't give us any choice--any of us."

He offered his hand to Jen, who had also risen. Jen took it.

"Hang in there," said Fanzone.

He turned and went out, followed by Warner Rethe. Jen stood and watched them go.

III

Tad and Wendy Hansard lay on the bed in Tad's quarters of the Operations and Checkout Building. Moonlight coming through the windows along one side of the room made things in the room visible to them, outlining Tad's lean-muscled frame in contrast to Wendy's softness of shape. They were calm now. They lay on their backs, side by side, looking at the moonlight-painted ceiling, and talking with little intervals of silence, now and then.

"How much longer until I have to leave?" Wendy asked.

He turned his head and squinted at the clock on the bedside table. The hands stood at a quarter to one.

"Fifteen minutes," he said. There was one of the little silences, and he added, "To hell with it. You can stay. What are they going to do--fire me?"

"No," she said. She reached out without looking at him and stroked the side of his naked arm with her fingertips. "It'll be a long day; and you won't have any chance to catch up on sleep the first two weeks. They're right. I've got to go."

There was silence again. She took her fingertips away from his arm.

"Jimmy's the one who really doesn't understand," she said. "The older two have an idea, at least."

"Idea?" he said. "About what? What Mars is?"

"No," she said, "about how long you'll be gone. Tom and Cassy have some idea, at least. Only some idea, of course. Three years is a lifetime, even to them. But they can think ahead and measure it by something. Tom'll be in his first year of college when you get back. Cassy'll be a junior in high school. But Jimmy . . . three years is half the time he's been on Earth."

"Little old afterthought, that boy," said Tad, half to himself.

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"Maybe we shouldn't have had him with a gap like that between him and the other two."

He sensed, without seeing, that she shook her head on the pillow.

"I was happy," she said.

"Me, too," admitted Tad. "Guess we've spoiled him."

"If we have, I'm glad," she said, "now that he's got to go three years without you. Tom and Cassy had you around those years when they were little."

Another little silence came and went.

"Sure," he said. "But it's always the now that counts."

They lay there with the moonlight strong upon them; and the hands of the clock at the bedside crawled upwards toward the hour of one a.m., as the eternal moment of the present ate its relentless way into the future.

Some sixty feet away, in his own quarters, cosmonaut Feodor Aleksandrovitch Asturnov, already asleep, dreamed of his dead wife and children. In shadow, his regular, narrow features looked like a bas-relief on an old coin.

They were out on a picnic. They had spread out the picnic things in a meadow that barely sloped for some little distance to the edge of a wide, very shallow river, glinting in the hot summer sunlight, and Maria was afraid that Vanya, being still a baby, would wander down and fall into the river. He tried to reassure her; but then with the older three children he went off into a little woods nearby to look for mushrooms. Somehow they got separated; and, going back to the meadow to look for them, he saw all five of them—Maria and all the children, Vera, Kostya, Iliusha . . . even the baby—wading in the river.

It was immediately apparent to him that Vanya, as Maria had feared, had wandered into the water; and Maria, with the other children, had gone after him.

"Don't worry!" Fedya shouted to them now, running toward the river. "It's all shallow—quite shallow—"

But as he looked, the current of the water seemed to catch them one by one. One by one, they appeared to step off into hidden depths. He saw their heads bob for a moment on the sparkling water, and then they disappeared. And he was still running, running, toward the river . . .

The anguish and terror of the dream half-woke him. He came to for a moment in the unfamiliar bedroom in the Operations and Checkout Building. For a second he was lost. Then he remembered where he was and why; and that Maria and the children had been dead for over two years now.

"That's right," he told himself, "it was a train wreck, not a river."

Strangely, the correction of his conscious mind comforted him. The dream image of the meadow

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and the heads bobbing on the water began to fade rapidly. He turned over on his other side and closed his eyes again. In a very few minutes he was deeply asleep and beginning to dream that he had been made sole commander of the Mars mission as the result of a last-minute change in plans. It was necessary, however, for him to fill out a number of forms attesting to the competence of the other five Marsnauts. He wrote rapidly but clearly, finding it a pleasure to put down on paper their high qualifications and his own high opinion of them . . .

In the hotel on Merritt Island, the angular, aging, six-and-a-half-foot length of Sir Geoffrey Mayence, Her Majesty's Deputy Minister of Science for the Development of Space lay hard awake. He had not been able even to approach sleep; and, chasing through his brain again and again, were his own words about cross-country running, that day at lunch in the Operations and Checkout Building with the Marsnauts. Remembered, his talk sounded fatuous and egotistic. What had he been doing, talking about cross-country running, nowadays—an old crock like him? A man should outgrow making a fool of himself.

It was his own inflated reaction, of course, to the young men, to the Marsnauts themselves. The very fact of their well-conditioned presence in the room was enough to challenge him into boasting about his own athletic past. Dirk Welles—the British 'naut in particular, must have been laughing up his sleeve.

Sir Geoffrey lay rigid, his long bony frame extended diagonally across the king-size bed, and thought of the sleeping pills in his suitcase. Insomnia. Another feebleness of old age. *No, by God . . .*

He lay, unmoving; and the slow gears of the iron hours ground their way through the darkness until light began at last to show around the edges of the heavy drapes shielding his bedroom from the dawn.

Launch time was scheduled for eleven a.m. At five-thirty the 'nauts were awakened by a call on their bedside phones. Tad rolled off the bed and up onto his feet. Fifteen minutes later, shaved if not fully awake, and carrying his two white cartons with morning urine and stool specimens, he joined the other five in the clinic for the last, cursory physical exam.

He did not feel like talking this morning; and as he went through the clinic door, he braced himself against the morning chatter of the others. But they were also quieter than normal. Even Bapti Lal Bose, usually merry, was now sober-faced.

They stood, lay down, got up and ran, all patiently for the benefit of the medical instruments. They

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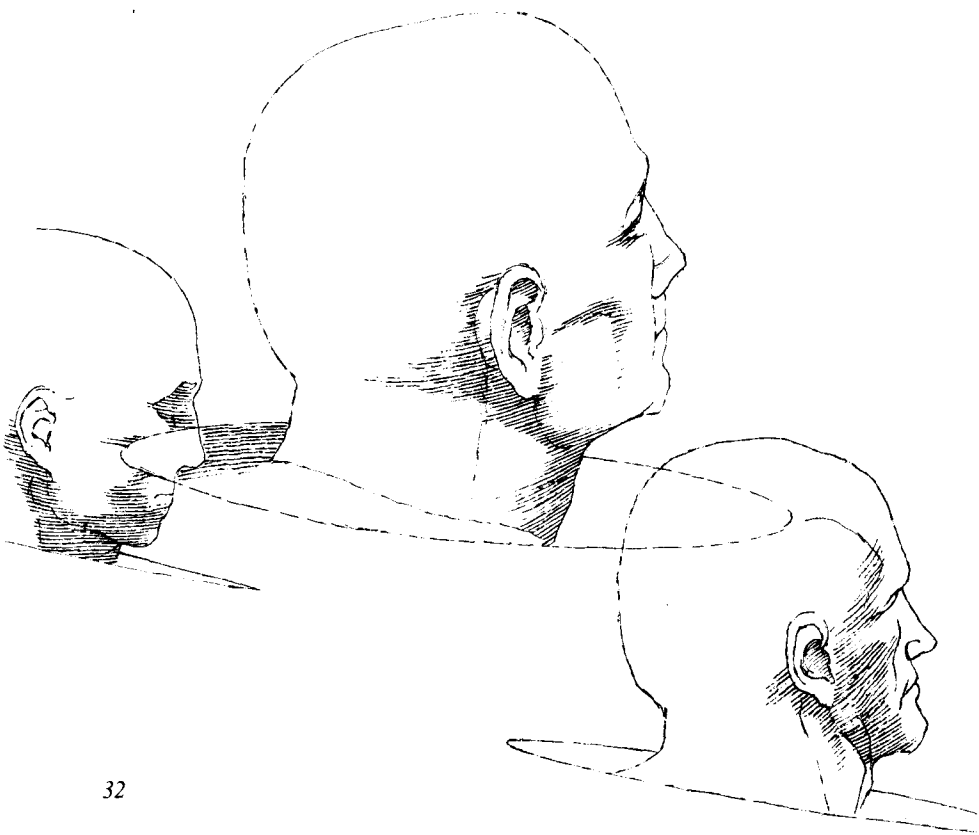
donated their blood by way of samples from fingertip and forearm, stared across scant inches of distance into the eyes of the physicians poking and prodding them, and were finally released to get dressed and have breakfast.

To Tad, the orange juice, bacon and scrambled eggs tasted good; but a very small amount of them seemed to fill him up. He was awake now, but not necessarily lighthearted.

"Sleep well?" he asked Fedya,



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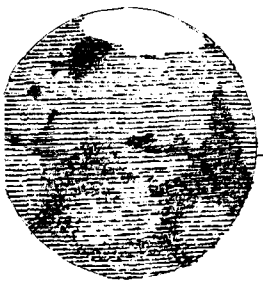
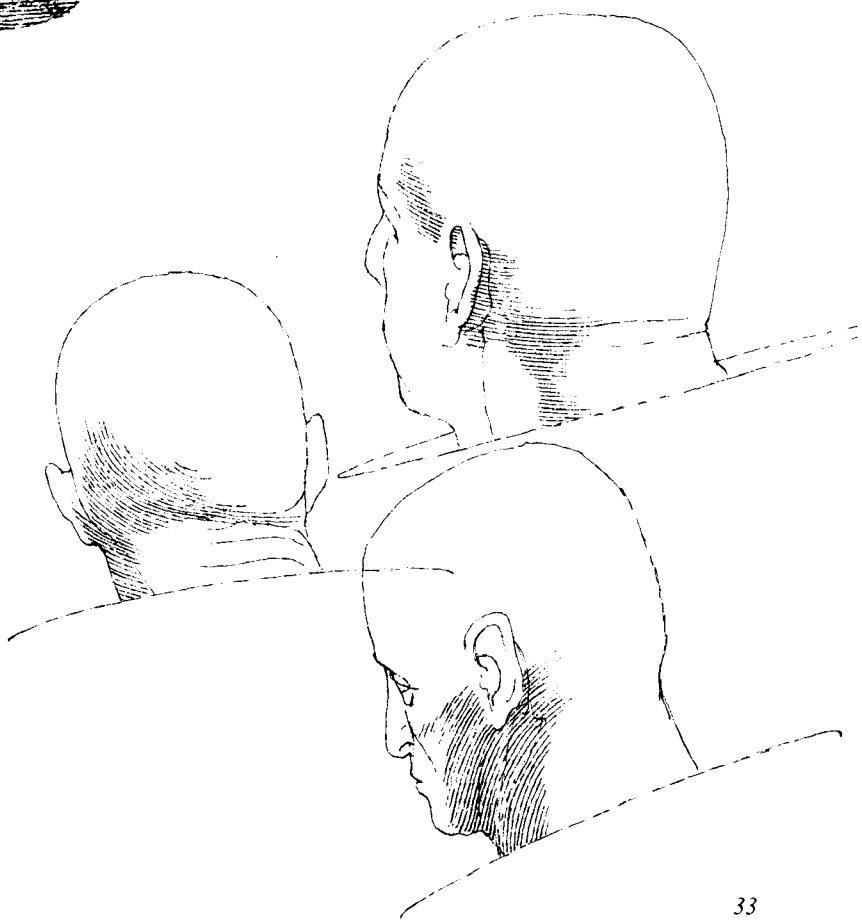
who was sitting across the table from him.

Feodor Asturnov's regular, calm features smiled a little.

"I think so," he said. The smile vanished. "I saw you talking to your President, at the reception."





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"Yeah," said Tad. "But don't expect any changes."

"I see," said Fedya. They were talking English, which was the tongue in which the mission crew was to operate—in which, as a matter of fact, it had been operating for nearly nine months now, since they had all started training together. For the first time in those nine months, Tad found himself wondering if Fedya was this taciturn in his own language; and whether, if they had been speaking in Russian, he would have answered merely, "I see."

"Sorry," said Tad. "I gave it all I had. I guess we're stuck with the full slate of experiments."

"We can still go on strike," said Bapti Lal Bose, rediscovering his normal cheerfulness, two chairs down on Fedya's side of the breakfast table. "A sit-down strike. Put *Phoenix One* and *Phoenix Two* into orbit and sit there, going around and around the Earth until they negotiate."

"All right, Bap," said Dirk Welles, the British 'naut. "Strike, it is. We'll leave the organization and the details up to you."

"I will take care of it. I!" Bap struck himself on the chest. "All scabs will EVA without suits."

Fedya had regained his quiet smile, listening to Bap. But now he shook his head.

"We can't afford even one scab," he said. The remark was humorous; but his face had gone serious.

"You can't afford to lose this scab, at least," said Bern Callieux. "Seeing you others are so ignorant about geology."

The round-faced young Pan-European 'naut was so soft-voiced, and his excursions into humor came so seldom, that the other five stared at him for a second before understanding. Then there was a general groan around the table. They had all been forced to sit through hours of classes on rock identification.

"The first boulder I see on Mars, Bern," promised Anoshi Wantanabe, the Japanese 'naut, "that's the one I'm going to pick up and hit you over the head with."

And the talk around the breakfast table began to sound more like the talk there on other, more ordinary mornings . . .

Jen came awake suddenly. He saw the face of Lin above him, her long brown hair fallen forward over her bare shoulders and screening their two faces within a small enclosure of privacy.

"I hate to wake you," she said, her blue eyes looking deeper than usual, here in the shadow of her hair. "You were sleeping so heavily. But you said something about getting going early."

He grunted.

"What time is it?"

Her face and hair moved back from him. Morning light struck him directly in the eyes.

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"It's just seven-thirty," she said. "Gotta get up."

He shoved himself off the bed on the side away from her and swayed to his feet. Stumping on heavy legs that were still clumsy from slumber, he made it to the bathroom and began splashing warm water on his sleep-chilled face. He stopped for a second to call to Lin.

"Phone room service for some coffee for me, will you?" he said. "This is Suite 814A."

He returned to splashing the water, which drowned the sense of her reply.

Twenty minutes later, dressed and awake by virtue of shower and shaving equipment and all the habits of arising, he sat in an armchair drinking coffee. Lin still lay in bed, her face on the pillow, watching him.

"Coffee?" he asked her.

She shook her head.

"Can you eat one of these sweet rolls?" he asked.

"Not right now," she said. "I ordered them hoping you'd eat them."

"Not this early—not this morning," he said. "I'll pick up something along the way." He finished his coffee and put the empty cup down. "Look, you've got a press pass, haven't you? I suppose the magazine got you one."

"Yes," she said.

"I'm supposed to be in the VIP stands," said Jen. "But I had a chance to phone last night. Do you know Barney Winstrom of Southwest Network? They're a cable TV group."

"No."

"Well, he'll call you here. He's going out with a large motor van full of video equipment to the parking lot at the press stands at nine. I got you a ride with him so you wouldn't have to fight the press buses. You'll be going a little early, but the van's air-conditioned and has a lounge in it. You'll be more comfortable that way than anything else I can arrange for you. I'll try to sneak over from the VIP's and join you just before the shuttle lifts. All right?"

"All right," she said. "Don't forget to set up an interview for me, to talk with the Hansard and Welles wives."

"I've got it in mind," he said, getting to his feet. "Now . . . see you later."

"Take care," she said, as he went out.

He left the suite, checked in with the security office and got an official car and driver from the VIP pool to take him from the hotel to the Press Center in downtown Merritt Island.

Inside, the building was aswarm with men and women wearing orange press passes; and buses loaded with more of the same were pulling out of the parking lot in back at regular intervals. Jen shouldered his way down the long trans-

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verse corridor until he came to the doorway next to the credentials desk. He went in to a long room bisected by an equally long desk; and got the attention of one of the women working at a typewriter behind the counter. She came up to the counter, a thin-faced, black-haired, cheerful young girl.

"Is Wally Rice in his office right now?" Jen asked. "I'm Jen Wylie. Would you ask him if I could see him for just a moment?"

She looked at him brightly, obviously not recognizing the name.

"I'm sorry," she said. "This is Mr. Rice's busiest time—"

"I'm the United States Undersecretary of Science for the Development of Space," Jen said, softly. "But I'd rather it wasn't noised about I was here. If you'll just tell Wally my name, I think he'll see me. We've known each other for some years."

"Just a minute," she said. She went off. In a few seconds, she was back, opening the swinging door at one end of the counter. "If you'll come in . . ."

Jen went through the door and followed her to a small cubbyhole of a white-walled, white-ceilinged office, within which was a short, heavy, tanned-faced man standing behind a desk.

"Sit down. Take it easy, Wally," said Jen, as the girl left them. "I'm just sneaking in to ask a personal favor—one I don't want to go through VIP channels for."

"You're looking good," said Wally. His accent was similar to the southern one of Tad Hansard, gentle against the hard-edged mid-U.S. voice of Jen. They sat down. "What can I do for you?"

"I want to talk to Bill Ward, just for ten or fifteen minutes, this morning," Jen said. "Don't jump down my throat, now. I realize he's *Launch Director*; but if I could just see him for those few minutes. It's important—"

"Well, I don't guess I have to jump down your throat for that," said Wally. "It might be arranged, if you see him before the shuttle goes. It's after that, with the Mars birds, he'll be busy. What's this all about—something governmental?"

"Yes . . . and no. Something personal and governmental both," Jen said. "The personal angle is why I don't want to go through the VIP machinery. Leaving aside the fact they'd diddle around all morning and end up not getting it done."

"That's a fact," said Wally. "We bail them out from time to time when it's something on short notice."

"Do you mind if I don't tell you what it's about, then?"

"Well, I don't mind," said Wally. "But Bill Ward's going to want to know why he has to walk away from his consoles."

"I suppose . . ." said Jen, unhappily. "All right. Tell him it's a matter of scheduling."

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"Just—scheduling?" answered Wally.

"Do I have to say more than that?"

"Maybe not," Wally nodded. "No, I would guess not. He knows who you are, nowadays?"

"I'm sure he does," Jen said. "You might work it into the conversation if you think he doesn't. But kind of mention, too, the fact that I'd just as soon my seeing him didn't get into the general conversation about this launch."

"All right. Gotcha," said Wally, reaching for the telephone. "Where are you going to be? This may take a little while."

"I'm going across to the Holiday Inn, or wherever I can get in, for breakfast," Jen said. "From there, I thought I'd go out to the press site a little early. I can leave word out there where I'm sitting—that is, if you'll give me a press pass."

"Hum," said Wally, thoughtfully letting go of the phone. "I didn't think of that. You've got a VIP badge. That and a press pass don't go together, exactly."

"One of the reasons I was named Undersecretary was because the President wanted my experience and knowledge with the press." Jen mentally crossed his fingers. "I think the White House would want me to have a press pass. Want me to call Warner Rethe right now and ask?"

He reached for the phone. Wally shook his head.

"I'll take your word for it," he said. Jen settled back, mentally uncrossing his fingers. "We'd better put 'White House Press Office' on it, though."

He picked up the phone and spoke into it.

"Well," he said, putting it down. "How've you been?" They chatted about things in general until another office girl came in with a press badge already made out. Jen pinned it on his shirt, shook hands with Wally and left.

The Holiday Inn, as he had expected, was jammed and people wanting to eat were standing in line for tables. He thought for a minute. As usual at a launch, a million and a half people had flooded the area. Cars were parked solid on the causeways, and any place that served food would have the same kind of waiting line he had seen at the Holiday Inn. He got back in his car and told the driver to return them to the VIP hotel.

When they got to the hotel, however, he had the driver swing past the VIP motor pool; and it was two-thirds empty of vehicles.

"On second thought, no," he told the driver, a security man with a thick brown moustache on a young face. "I can't risk losing you—or being left without wheels. Have you had breakfast?"

"Two hours ago," said the driver.

"Good," said Jen. "I can skip it.

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Take me out to the press stands; and I'll turn you loose."

The driver pulled back out into the busy traffic of the street. Jen glanced at his watch. It was nearly a quarter after eight, already. There really had not been any time for breakfast in the first place.

The roads to the Cape Kennedy area were already full. They soon found themselves locked in line behind a camper wagon that was in turn behind a press bus. However, they managed to proceed at twenty miles an hour, until they reached the entrance, the traffic thinned and they picked up speed. It was twenty-five minutes after nine when they finally got to the press site.

Jen thanked the driver and got out. He watched the white sedan with the official seal on its side turn and go, then turned and walked in over the little wooden bridge to the end of the press stands.

The stands were half filled; and the first few rows of correspondents at telephones and typewriters were without empty spaces entirely. Jen came up to the small official building by the end of the stands, mounted three steps and knocked on the door. There was a moment's wait and then the door opened. A thin, harried-looking man in shirtsleeves looked out.

"I'm Jen Wylie," Jen said. "I'm expecting a message from Wally Rice, at the Press Center. He said he'd leave word here."

"Oh yes, Mr. Wylie," said the thin man. "He said to check back here with me about ten. He ought to have some word for you by then. Where're you going to be in the stands?"

"I don't have a seat," Jen said. "Why don't you just call me over your PA system? Only don't use my name—ask for Mr. West."

"Right, Mr. West. I'll just make a note of that." The thin man ducked back inside, closing the door, and Jen started for the stands, then changed his mind and went back across the little bridge to the press parking lot to see if Barney Winstrom's van with Lin had arrived.

He found it in the most recently arrived row of vehicles and knocked on the door. It opened; and a blast of air-conditioned air chilled his already damp forehead.

"Let him in!" called the voice of Barney from somewhere in the dark interior. The man who had opened the door stood aside and Jen climbed gratefully up the interior steps into the coolness.

Lin was sitting, drinking a beer in the office section of the van with Barney, a cheerful, overweight fifty-year-old. Jen accepted a can of beer, himself; but it was only half-emptied before the sound of the public address system at the press stand reached his ear.

The sound of the air-conditioning and the walls of the van had made the words unintelligible.

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But Jen got up and opened the door of the van in time to hear the message repeated.

". . . *Will Mr. West come to the north corner of the stand, immediately?*" the loudspeakers were booming. "*Mr. West, wanted at the north end of the stand, immediately.*"

Jen put his beer can aside and went. Waiting for him at the corner of the stands was a uniformed guard wearing a general pass with a yellow Vehicle Assembly Building tag on it.

"If you'll come with me, Mr. Wylie," said the guard.

They crossed to a NASA sedan that was waiting, and rode over to the four-story section of the VAB that was the Launch Control Center. Inside, an elevator lifted them to the third floor and Jen's guide took him down a short stretch of narrow hallway to the active firing room.

Inside, the ranks of consoles on the sloping floor marched away down to a level area filled with other ranks of tall metal cabinets. Jen and his guide came up to the console behind which stood Bill Ward, looking over the shoulder of the man seated there, before turning away to talk to two other men in shirtsleeves standing with him. Jen and the guide stood and waited silently.

Bill finished talking and turned abruptly to face Jen.

"Well, Jen?" he said. "You said you wanted to talk to me?"

"That's right," said Jen.

"All right, come with me," said Bill.

He strode off with Jen, leaving the guide behind. They went back to the door of the firing room, out of it and down the hall to another door. They stepped into a room which was exactly the size of the firing room they had just left, but empty of consoles and with a wall cutting off most of the level space beyond the slope. In the middle of the nearly empty room was a conference table with straight chairs around it. Bill led Jen to this, and sat down in the end chair of the table, stiffly upright. He motioned Jen into the chair next to him.

"All right," said Bill briskly across the corner of the table, as soon as Jen was seated. "What sort of scheduling is this supposed to be about?"

IV

The directness of the question took Jen unaware. He had spent too much time recently in the area of political people and their words; he had forgotten this other area of machines and their people—the land of plus and minus, day and night, go or no-go. All at once the pressures of the last few days, the tension, the lack of breakfast and the half a can of beer on his empty stomach piled up on him and made the whole situation seem unreal.

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He stared at the strange, empty, sloping-floored room around him, half ready to believe that it was some stage scene mocked up for his bafflement. Even as he looked at the room it seemed to sway and tilt in the fashion of a room in the crazy-house of an amusement park.

"Hold on!" Something caught him strongly by the upper arm and he became aware that Bill Ward was holding him upright in his chair and was talking to him. "What's the matter, Jen? Are you all right?"

Jen blinked; and got his eyes, the room, and himself once more under control. He straightened up in his chair.

"Yes," he said, surprised at the huskiness of his own voice. "Skipped breakfast this morning. I guess it really wasn't the best thing to do . . ."

"You're pretty pale," said Bill, sharply. "You'd better just sit there a minute. Let me get you something."

"No, no. I'm fine . . ." But Bill was already gone. "Just water!" Jen called after him. There was a minute or two of nothing happening; and then Bill came back with a paper cup half filled with water.

"May be a coffee taste to it," said Bill, sitting down with him again. "There's no cups around here. I had to get a cup of coffee from the machine and pour the coffee out to fill it with water from the fountain. How do you feel?"

"Fine," said Jen. The water flowed down his gullet, a cool finger of feeling that brought him to. He set the cup down. "Where are we? What is this room?"

"One of the firing rooms," said Bill. "There were four—one never got activated. You still look pretty white. Sure you're all right?"

"Except for feeling like a damn fool, yes," said Jen, strongly. "I'm all right. Look, you asked me what scheduling I wanted to talk to you about. It's the experiment schedule for the 'nauts."

"That?" said Bill.

"That," said Jen. "Tad's told me the 'nauts think it's too much. I talked to the President. I even got Tad to talk to him. Nothing doing. So I came to you."

Bill sat in silence for a second.

"Why me?" he said then, in an emotionless voice.

"It's politics," said Jen. The room threatened to sway again; but with determination he kept it solid and real. "It seems every nation involved in this wants the largest share of the mission's time they can get; and national pride is at stake when it comes to agreeing to cut their share of the schedule. Apparently the President—apparently they all believe that the general public in each of the cooperating nations wouldn't stand for the experiments being cut—it's the way they measure their part of the mission."

"All right," Bill Ward said, "I say—why come to me with this?"

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"You're the Launch Director."

"Sure."

"Well, God damn it!" said Jen. "You're part of the people who're putting those boys up there. If their work schedule's too heavy during the first six weeks, or whatever, you have to know it is so, don't you? If there's something that's going to put them and the mission in danger, you'd want to correct it—"

"Slow down," said Bill.

Jen quit talking. For a second they were both quiet; and a healing silence gathered in on them from the empty room.

"What do you think we could do?" asked Bill, after a little.

"You could kick up a fuss," said Jen, but without the explosiveness that had been in his voice a moment before. "If you get word from them that they're too busy, or too tired, you can tell them to skip part of the experimental work, can't you?"

"You want the Mission Director for that," Bill said calmly. "If and when the 'nauts complain to him he'll order a revaluation of the situation and take what corrective action seems to be called for."

"I don't know the Mission Director," said Jen. "You do. If you spoke to him, wouldn't he order a reduction, as long as you and he have to know as well as Tad and the others do—that they're overscheduled?"

Bill sat back in his chair. He was thick-waisted enough so that he sat stiffly upright, putting his head higher than Jen's. He glanced briefly at his watch.

"I have to go back to the firing room," he said. "I'm sorry, but I couldn't help you even if I wanted to. You're talking to the wrong man."

"Is it the truth that you'd want to?" said Jen, as Bill shoved his chair back.

Bill stopped. For a moment his face seemed to signal a coming verbal explosion. Then it relaxed and changed.

"Let me tell you something," he said in a quiet voice, pulling his chair up to the table again. "Do you know what puts men up into space? Other men and women. And those other men and women have to eat. They've got to make mortgage payments and feed their families. There's got to be a payroll; and the birds don't pay for themselves like a cash register. What they do is bring in long-term benefits that a high percentage of people can't connect with their going up in the first place."

"I know that," said Jen.

"Do you?" said Bill. "Do you know it in the paycheck area? Were you ever personally given the choice of taking a one-quarter or more cut in your salary at a time when you had shoes to buy for the kids and dental bills to pay? Take it or quit your job. It isn't a matter of work—most of the people here work long hours when they're

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needed, away and beyond what they're paid for in the first place. But they've got to be paid *something*. And we damn near lost that something, that minimum, a couple of times now."

"I know that," said Jen.

"Never mind what you think you know," Bill said. "Just listen a bit. We damn near lost the payroll about eight years ago. And if we'd lost it entirely, we would have lost the experienced men behind the work going on here today. As it was, we lost a lot of them anyway. People blame it on the push for poverty programs; but if it hadn't been the poverty programs, it would have been something else. Once the emotional push quits, the people who don't know basic research and don't understand it start to make themselves heard. And those who ought to explain it to them are too busy attending to their own affairs. So something like the space program goes down the drain, along with the skills of the people who've worked in it eight to twenty years. And everybody suffers."

"You don't need to worry now," said Jen. "You've got half the population of the world cheering for you on this mission."

"Right," said Bill. "And if they quit cheering, it's not going to be because of any errors our people made. If we cut that program of experiments while it still looks possible the Marsnauts can handle them without trouble, and one of the cut experiments results in some people here, or India, or anywhere else, dying because certain experimental equipment wasn't tested—what do you think the newspapers are going to be saying about us, when they start reporting those deaths? Well? You were a newsman to begin with. What do you think?"

Jen sat silent.

"You see," said Bill, a little more gently, getting to his feet from the chair, "we're able to make this mission to Mars because the public spotlight is on us again. But the price of being in that spotlight is that everything we do is going to be seen, and remembered—and maybe used against us sometime in the future when the spotlight's back off. You can be sure we'll re-examine the experimental schedule if and when the 'nauts complain about it. But asking them to do it beforehand—and in the face of a political demand for those same experiments—doesn't make sense."

He stopped talking. Jen still said nothing, sitting there not knowing quite what to do. He put a hand on Jen's shoulder.

"Come along with me," he said. "I've got to turn you back over to the security man who brought you."

Jen stood up numbly. With his hand still on Jen's shoulder, Bill led him up the bare slope of the room and out the door into the corridor.

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"The boys in those ships are just going to have to fight some parts of their battle alone," Bill said. "It's a hard thing to say, but it's only the way things are."

The guard was waiting for Jen outside the entrance to the occupied firing room.

"Where to, Mr. Wylie?" asked the guard. "Back to the press stand?"

Jen started and came to. He looked at his watch.

"No," he said. "No. I'm supposed to be over in the VIP area by this time. Better take me there as fast as you can."

But when they got to the VIP area, he and his guide were directed on to the entrance of the Operations and Checkout Building, where the Deputy Ministers were waiting to watch the Marsnauts board the vehicle that would carry them to the waiting shuttle.

Over a period of time, thought Tad, a spacesuit became familiar, just like everything else. The strangeness that came with it, the first time you had it on, and that everyone who had never worn one imagined was always there, evaporated or was lost somewhere along the way. In the end it was no more than getting taped up and into a football uniform.

Of course, it still took over an hour to get the spacesuits on, even with plenty of help. First came the long underwear with all the sensors wired into it that had to be attached to the skin of the body at various points with a special glue that not even perspiration could loosen. Then, there were tests to make sure the sensors were all working. Then came the climb into the suit itself, and the twisting to get the plug with wires from the underwear sensors into its socket inside the suit. Then more tests to see that everything was working when the suit was plugged in to the recording outlet. Finally, there was the sealing of the suit and walking around in it, the testing to make sure that everything had been done right and nothing had been left undone.

Then you were free to move out to the carryall waiting to transport everyone to the shuttle.

Leading the others, Tad clumped on his heavy, magnetic (if presently inactivated) boot soles down the corridor, into the elevator, out of the elevator, along the ground-level corridor and out into the sudden glare of August Florida sunshine. His helmet's faceplate darkened automatically. The temperature control of the suit was undoubtedly stepping itself up to keep him cool, though he could feel no sign of it. Out beyond the entrance, by the green glass-topped carryall, was a small knot of people—the Deputy Ministers, provided with headsets and phones so that they could talk to their 'nauts. Jen was among them, looking somewhat dishev-

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eled, as if he hurried to be here. Tad stopped briefly in front of the taller man. Jen, he saw, was not looking good—his face had the stupefied, heavy expression of someone overdue for sleep. His lips moved.

"Good luck," his voice said over the circuit in Tad's earphones. The words were overlaid and made almost unintelligible by the voices of all the other diplomatic people talking at once to their own 'nauts. It was like being on an old-fashioned telephone party line that everyone was trying to use at once. Jen shook Tad's large-gauntleted hand, peering through the sunshaded glass of the helmet to see his face.

There was no way to talk privately. Tad raised his eyebrows, interrogatively. Jen shook his head. Tad nodded grimly in acknowledgment of the information and promise of his determination; but the gesture, while successful, was lost in the looseness of the spacesuit. He did not believe that Jen had seen or properly interpreted it.

Someone was tapping Tad on the shoulder. It was time to get into the carryall. He raised his right glove in salute to Jen, turned all in one piece, as you had to do when suited, and went forward and up the steps into the carryall, taking the first large seat to his left.

The other 'nauts entered, heavy-footed, and went past him to fill the double row of seats on either side of the wide aisle. Fedya, as the co-commander of the mission, sat down in the other front seat, across the aisle from Tad. All were aboard, now. The door to the carryall closed and the vehicle rose on its underjets and slid off down the way to the waiting shuttle.

They had fallen into group silence again; and, isolated in the privacy of his suit, Tad welcomed it. He was conscious of the suit as a second skin. He felt the familiar pressure of the EMU urine collection system front and back about his crotch, the pressure of the shoes against his sole and heel, the weight of his helmet, of the folded fabric pressing on shoulders, arms and thighs, the thickness at his waist and under his arms. But it was a familiar feeling, again like the football uniform—no matter how strange it might feel to someone else. Now, in their suits, all of them in the bus had stepped over the line, and become a different sort of people from all those others on Earth who were waiting and watching. They who were bound for space were set apart by what they did—and by why they were about to do it.

They belonged to Earth, but their business was elsewhere. They were like working sailors. Like deep-sea fishermen. He remembered the age-greened, copper statue at Gloucester, Massachusetts, of the New England fisherman standing with one knee braced

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against the wheelhouse, the deck canted under him, the eyes beneath his rain hat looking outward and ahead.

He and the others, Tad thought, were like sailors. They must travel out and away. The silence of the suit phones rang in his mind now like the imagined sound of the sea heard when an ocean shell was held to the ear. It was as to the sea he and the others were now going. How did the psalm go? *"They that go down to the sea in ships, that do business in great waters . . ."*

Jen had managed to break away from the Deputy Ministers. Luckily, the guard and the NASA auto had waited for him.

"Back to the press site," Jen said, getting in. The car pulled out into the empty road.

As he crossed the wooden bridge to the press stand, the loudspeakers of the little building holding the thin NASA man were announcing that the vehicle carrying the 'nauts had just reached the shuttle. The big screen in front of the press stand, thirty feet long by ten high, gave a window-like, three dimensional view of the carryall pulling up the ten-degree slope of the brown, concrete launch pad, to halt at the top by the Mobile Launch Tower. Slow-moving because of their suits and therefore more solemn than they might have seemed otherwise, the 'nauts emerged, one by one, from the vehicle and went to the elevator in the MLT.

All this was happening as Jen walked along the front walkway of the stands, looking up into them to find Lin. He found her at last, about halfway up in the far end section, and climbed up the nearest aisle. She had her arm over an empty, gray-painted metal folding chair beside her. As he came up to her, she took her arm from it.

"Sit down," she said. "I've had a hard time holding this for you." She looked at him perceptively. "I'll bet you didn't get any breakfast after all."

He shook his head.

"Doesn't matter," he said. "We'll make up for it at lunch. You'll be ready for lunch yourself, after the launch?"

"Of course," she said, lightly. "I always lunch after launch. Did you set up appointments for me with the wives of Tad Hansard and—who's the British Marsnaut, now—Dirk Welles?"

"I'm sorry," he said. "I just haven't had time, yet—" He broke off. She was staring at him.

"Haven't had time!" she exploded. "I mentioned it to you last night and again this morning! Do you realize I've been down here nearly twenty-four hours and as far as the magazine's concerned I haven't done a thing?"

"I really am sorry," Jen said. "But in any case you couldn't get to see them until later—"

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"And what if it turns out I can't see them this afternoon? What if it turns out I'm going to miss them completely because they're going off someplace?" She was blazing mad. "Do you think I came down here just for . . . just for a holiday?"

"I'll do what I can as soon as I can," he said. "They'll be in the VIP stands right now watching like everyone else. There's no way I can talk to them until after the launch. As soon as I can, I will."

Lin jerked about, staring straight before her over the rows of heads below, at the large video screen before the stands.

He watched her for a moment, waiting for any answer she might make. But she made none. He looked at the screen himself. The 'nauts were going up in the Mobile Launch Tower elevator now two by two, and across the catwalk to the shuttle entry hatch, some seven stories above the level of the launch pad. Jen felt empty—a shell of a man, inwardly stripped of energy and muscle, a dull-minded, sweating observer, floating with the too-powerful currents that pushed against him. Lin's burst of anger had cut away his last illusion of understanding and support for the lonely position in which he had placed himself.

Yet, this was the moment to which he had been looking forward. The moment in which he had expected to feel something almost mystic, the larger part of the world's population concentrated, participating in a single action all together like members of a single family. And, in fact, to a certain extent the feeling was there.

The stage was set. Before them, beyond the stands and the line of video cameras with their telescopic lenses manned by assorted news cameramen, was the grassy apron of land leading to the water up which huge sections for the Apollo series of rockets had been carried by water, to the very doors of the Vehicle Assembly Building. The VAB itself stood to their left, so large that it had been able to handle four of the twenty-seven-story Apollos at once, one in each of its high bays. So big that it tricked the eye, looking like a smaller building much closer than it was. In the other direction, three miles off from the press stand, on the launch pad of LC39, was the shuttle itself.

Above, the relentless Florida sun in August beat on metal, concrete, green scrubland, men and women alike. The mingled voices from the press stands of newspeople speaking into telephones and microphones and to each other hummed like the voice of a wasp hive under the amplified tones of the public address system, explaining what they were seeing on the large video screen.

". . . *and now, last of all, as se-*

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nior of the two co-commanders of the mission, Tad Hansard is leaving the elevator and boarding the shuttlecraft . . ."

From day-brilliance, Tad stepped once more into interior dimness; and once again his faceplate adapted, clearing so that he could see the section of the shuttle in which they would travel. The six gimbaled acceleration couches were arranged three on a side, and the foremost one on the left side was waiting for him. He walked to it, eased himself down into it and plugged his spacesuit's umbilical into the receptor mounted on the bare metal wall alongside it.

It was like sitting in a circular-walled section of an old-fashioned cargo plane. The shuttle itself was a cargo carrier; and the metal framing and walls of its body were bare; the floor beneath the couches, a corrugated steel plate, broken only by the metal hatch opening in the center and the ladder leading both down to the cargo sections below, and up to the control section overhead where the pilot and co-pilot of the shuttle would already be in their own acceleration couches, ready to lift.

Everything around Tad—couches, receptors, even the floor plate, was an accessory to the shuttle's normal interior configuration and could be quickly and easily removed in the case of a flight carrying cargo only to one of the space labs in orbit around the Earth. Like himself, and the other 'nauts, like the shuttle itself, everything here was utilitarian, replaceable—and expendable.

Anoshi and Bap were talking now over the helmet phone system, joking gently and quietly. Beside him, Fedya was not talking; and Tad did not feel like talking either. Work time was here. They were away from the eyes of the world now, ready to begin their jobs.

A red light lit on the forward section of curved wall facing them.

"Shuttle pilot, here," said a voice in their earphones. "Steve Janowitz, gentlemen. All ready to lift on schedule in eighteen seconds, seventeen, sixteen . . ."

The press stands were half empty. As in the days of the Apollo flights, newsmen and newswomen had left their metal folding chairs and the shade of the roof above the stand, and swarmed forward to the water's edge a hundred yards or so beyond the stands. Lin, however, had not moved; and Jen had stayed seated beside her. He was beside her now, his eyes on the shuttle as the countdown proceeded.

Lin glanced at him narrowly out of the corner of her eye; but he was watching only the shuttle. For a moment, something like contrition stirred in her, but she hardened her will against any softening toward Jen. *After all,* she thought,

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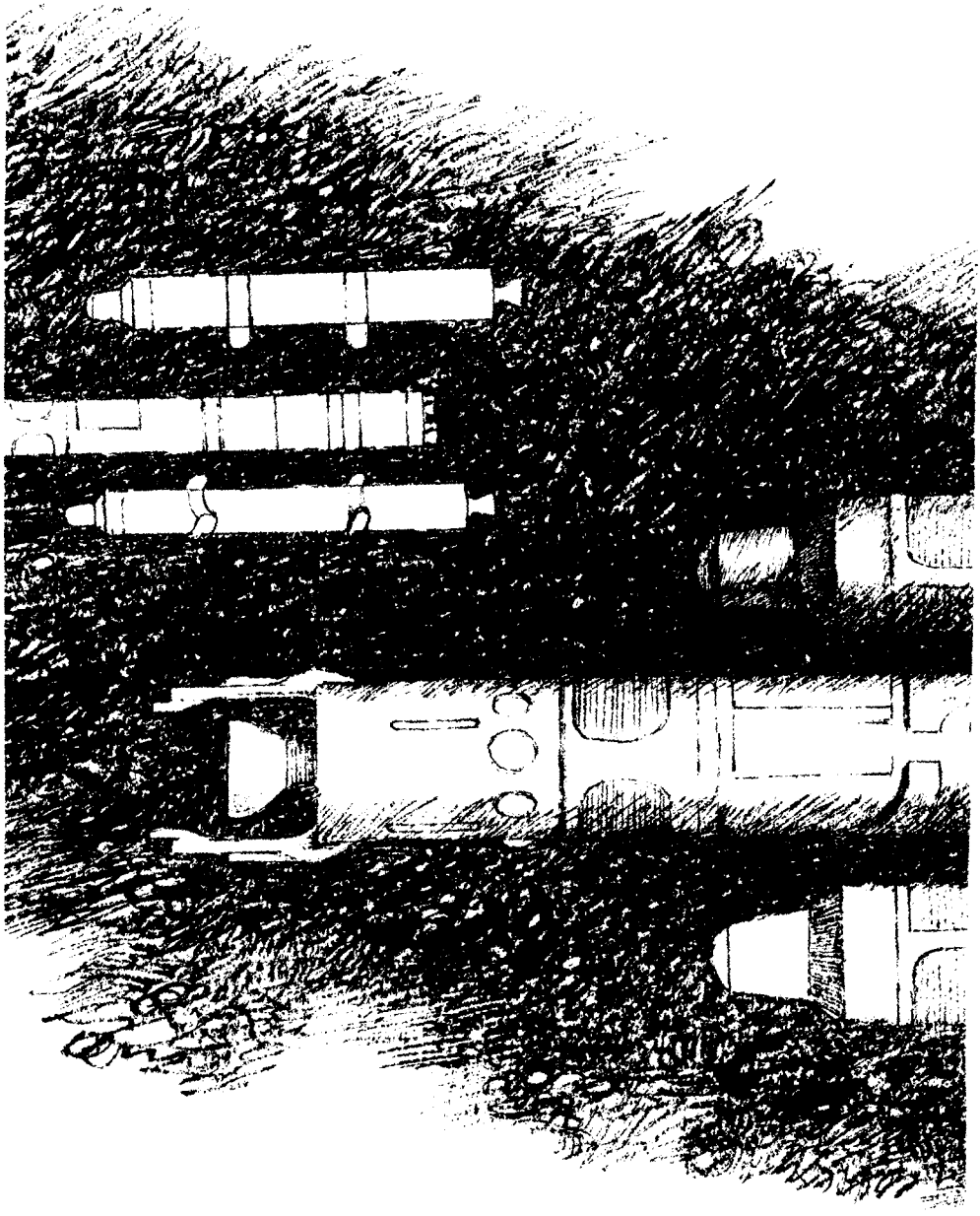

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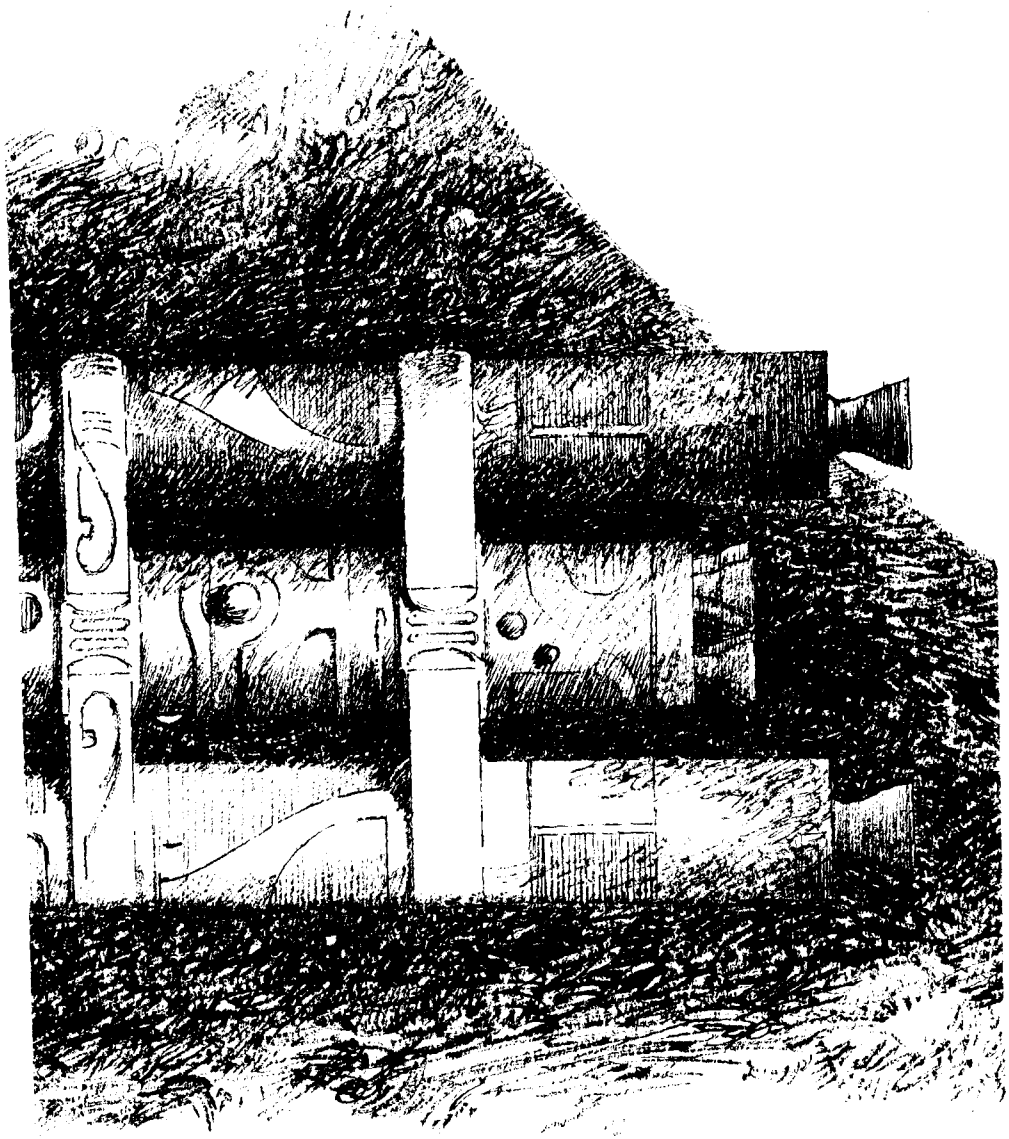

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I've got my work to do, too, and my own responsibilities. He'll have to learn to consider them, too . . .

". . . *five,*" said the public address system, "*four, three, two, one . . . and we have liftoff!*"

Orange flames spurted from the base of the shuttle, shooting out to each side. For a moment the whole space-going creature seemed to stand there unmoved above flames—then it began to rise. The flame faded to white fire. Slowly, and then more swiftly, the shuttle lifted into the sky; as the thunder of a giant's firecrackers reached and rolled over the press stand, making the whole structure shiver under those like Jen and Lin who still sat in it.

The shuttle went swiftly into the cloudless sky and was lost to sight.

The hand of acceleration lay heavily upon Tad and the others as the shuttle lifted—but not so heavily as in the past. Three gravities for the shuttle as opposed to the ten gravities of the old Apollo launches. Tad waited out the pressure that forced him down into his couch, until it finally yielded partway, then ceased altogether. His weight went from him and he floated on the couch. Thirty minutes had gone by and they were now in orbit with the two Mars ships that had been assembled here, away from Earth's gravity.

"Just about there, gents," said the voice of the shuttle pilot in their helmets. "Right nice burn we got. Now a little correction . . ."

Ten minutes later, there was a clanging of metal transmitted through the skin of the shuttle as it docked with one of the Mars ships.

"*Phoenix Two,*" announced the shuttle pilot, in their earphones.

Fedya, Dirk and Bern disconnected their umbilicals, rose and clumped off through the entry hatch of the shuttle that now opened on a docking tube connecting with the entry hatch of the second Mars vessel.

"Now for *Phoenix One,*" said the pilot. The shuttle undocked and moved off.

Ten minutes more and it was the turn of Anoshi, Bap and Tad to leave their shuttle couches for the tube. It let them through an air lock into the pleasant, white-walled surroundings of the control level—top one of four levels—in the ship that would be their home for the next three years. They checked to make sure the air lock was closed again behind them.

"All clear," said Tad over his helmet phone to the shuttle pilot.

"All clear. Disengaging," came the answer.

With a clang heard through the metal bodies, the shuttle undocked from *Phoenix One.* The three of them moved to their control couches and plugged in their umbilicals. They began final checkoff.

The seconds counted down toward launch time. Checkoff was

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completed. From the two ships Tad and Fedya reported to Mission Control that all was ready; and Mission Control entered the last sixty seconds of countdown to firing—to the actual launch that would lift both ships into a Mars-injection orbit.

"Fifty seconds and counting," said the headphones in Tad's helmet, as he lay on the acceleration couch waiting. About him he could feel the huge shape of *Phoenix One*, thirty-three feet in circumference, two hundred and seventy feet in length with two nuclear booster engines flanking her. "Forty seconds and counting . . ."

He could feel the ship now as if she was no more than a much more massive spacesuit enclosing him. She was his ship, he and she were identical.

"Thirty seconds, twenty-nine seconds . . ."

Earth was nothing, now. This was everything. He could not look back at the planet below, he could not even look back at his wife and children in this moment. He could look nowhere but forward, out toward where he was going, like the statue of the Gloucester fisherman peering ahead from under the brim of his rain hat . . .

"Fifteen . . . fourteen . . . thirteen . . ."

"They that go down to the sea in ships," he thought again, *"and do business upon great waters"*—that was written for him and the five others as well as for all those who had ever sailed out of sight of land. It was only a mightier ship he sailed, now, out into a greater ocean.

"Ten . . . nine . . . eight . . ."

He thought, the psalm should read, *"They that go out to the stars in ships, and do business in great spaces—"*

"Two . . . one!"

His gloved finger came down on the backup firing button. A part of what was unseen to him, white fire blared from three great sets of jets; and acceleration jammed him down, down into his couch, as *Phoenix One* with its sister ship beside it, lifted outward to the stars.

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the synchronistic barometer

Some forms of "occult" forecasting seem to work, for some people. One of the tools available for such "magic" is a binary code, invented more than three thousand years ago!

Until the advent of a decent time machine, we must accept that history is often vague and frequently inaccurate. The farther back the period under consideration, the more inaccurate and vague it is likely to be.

Extant histories of Fu Hsi provide an excellent example of the trend. Fu Hsi was the first emperor of China, living almost five thousand years ago. Scholars still wonder if he might not have been legendary. The records are no help. They say things like this:

"Fu Hsi ruled all things under Heaven. He looked up and contemplated the bright patterns of the sky, then looked down and considered the shapes of the Earth.

"He noted the decorative markings on birds and beasts and the appropriate qualities of their territories. Close at hand, he studied his own body and also observed distant things.

"From all this he devised the eight trigrams, in order to unveil the heavenly processes in nature and to understand the character of everything . . ."

Not exactly packed with information, but not all jabber either. The eight trigrams, for instance, are real enough. They originated somewhere between forty-five hundred and thirty thousand years ago in prehistoric China.

Trigrams, as the name implies, are three-lined figures. They probably evolved from a primitive form of fortune-telling in which the shoulder bone of a cow was heated and future events read from the cracks which formed.

These cracks (it is reasonable to suppose) eventually became stylized into the trigram pattern of broken and unbroken lines. Philosophers moved in. The unbroken lines were taken to represent Heaven, or yang, the positive aspect of phenomena. The broken lines signified Earth, or yin, the negative aspect of phenomena. All possible trigrammatic permutations of the two produced eight figures.

And there the situation seems to have rested for a few millennia until a feudal lord named Wen found himself with time on his hands.

Around 1143 B.C., Wen was living proof that virtue does not bring its own reward. As administrator of the western province of Chou, he was one of the most popular and

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able men in China. But he got very little thanks for being either.

By contrast to Wen, the emperor of the day, Chou Hsin, was an incompetent. He also seems to have possessed a little of that Oriental bloody-mindedness which it has become fashionable to ignore since President Nixon visited Peking.

Chou Hsin wanted no competition. He had Lord Wen arrested and jailed in the Imperial Capital of Yin, a city now long dead and buried near Anyang in the province of Honan.

Wen stayed in jail for a year, worrying about the distinct possibility of execution and working on a project which may have been designed to take his mind away from immediate problems. He might have remained incarcerated longer, but he was not without friends. Political pressures eventually secured his release.

This development, welcome though it may have been in terms of abstract justice, ably demonstrates the bumbledom of Emperor Chou Hsin. Within months, Wen was leading the province of Chou in open rebellion.

Asiatic civil wars are long and bloody, as America has discovered in Vietnam. More than fifteen years went by before Yin fell and Chou Hsin was thankfully slaughtered. Even then, the worst was still to come. Rival factions within the victorious forces went to war with one another and managed to raze the capital before settling their differences.

Wen was not alive to see the final peace. It was left to his son Tan, Duke of Chou, to become the first Chou emperor and found a dynasty. Chinese historians, however, decently award Wen the posthumous title of king.

Oddly enough, his name survives less due to military victories than to the work he carried out in jail.

In the year before his friends secured his release, Wen meditated on the trigrams. Eventually he came to combine them into hexagrams—six-lined figures, giving a permutation total of sixty-four—named each one and added oracular explanations.

Forty years later, in the peaceful days that followed the civil war, Wen's son, the Duke of Chou, enlarged on his father's work by producing interpretations of individual hexagram lines. Their composite work became known as the Chou I, or Changes of Chou.

Five hundred years later, the greatest Chinese philosopher of all wore out three sets of leather bindings through his frequent consultation of the work. He died wishing for an extra fifty years to devote to its study.

Whether Confucius actually wrote the commentaries on the

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oracle which are popularly attributed to him is a controversial question among scholars. But commentaries were certainly produced by several of his followers and subsequently incorporated in the text.

The oracle evolved into a Confucian classic and was required study for prospective members of the Imperial Civil Service over a period of two thousand years. It became known as the *I Ching,* or Book of Changes.

There was a time when science chose to ignore the occult, when claims about the reality of precognition were held to be so ridiculous that they did not even warrant investigation. That time has gone, its departure hastened by the work of men like Dr. Rhine, who established parapsychology as a respectable discipline in the United States.

Because of this, the *I Ching* becomes something more than an historical curiosity. It is worth paying attention when one modern authority writes: "Its authors were concerned with the principle of everlasting change which governs the exquisitely balanced universal harmony; the transient individual changes that result are of secondary importance.

"Though this ancient work has long been used primarily for divination, it is revered also as a source of wisdom and as containing in cryptic form the quintessence of an incredibly ancient philosophy.

"Its hoary antiquity, its extreme terseness and the mystical nature of its contents all combine to make it highly enigmatic . . ."

The heart of the book is divided into sixty-four sections, each one headed by a different hexagram, titled and analyzed into its component trigrams thus:

Feng/Abundance
above: Chen, the Arousing, Thunder
below: Li, the Clinging, Flame

Chen and Li refer to the component trigrams.

What follows is a brief text, the work of King Wen:

"Abundance has success. The king attains abundance. Be not sad. Be like the sun at midday."

This in turn is followed by the Confucian commentary—very necessary in most cases since the text is not always as easy to follow as the example quoted—and by a note on the symbolism of the hexagram.

Finally comes the Duke of Chou's interpretation of the individual lines, any one or more of which may gain extra emphasis via the technical process of consulting the oracle:

"Six in the fifth place means: Blessing and fame draw near. Good fortune."

The *I Ching* may be consulted using coins, yarrow stalks or a set of specially constructed divining "wands." All three methods aim at building up a hexagram which is

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then interpreted. Using the coin or yarrow stalk oracle, a situation often arises in which the original hexagram is said to develop into a second hexagram which is also interpreted.

In view of this and the fact that each individual line may be stressed, the oracle is capable of producing four thousand and ninety-six answers to inquiries.

No one in modern Rome tells fortunes with the aid of bovine entrails and the pythoness has long departed from her cave at Delphi. Yet the *I Ching* has not only survived, but expanded its sphere of influence. By the Seventeenth Century, for instance, it had not only reached Japan, but was actually being used to train the Samurai warriors in strategy.

The book is not, of course, a military manual, but Yamaga, who turned the Samurai into Asia's most feared fighting force, found it useful in determining the best times to advance and retreat. In a way, he may have set a precedent which was to bear peculiar fruit three hundred years later.

When the Japanese bombed Pearl Harbor and launched the bitter Pacific War, several high-ranking officers used the *I Ching* as the basis of their naval strategy. Judging by their early victories, it seemed a workable enough idea. Even today, there are Japanese who feel the whole of World War Two might have ended very differently if the very highest levels of their military command had not been too westernized to consult the Book of Changes.

More recently—toward the end of 1962—there were signs that, despite official disapproval of the book as "ancient superstition," the Red Chinese were using *I Ching* strategy in their border war with India.

Whatever the truth of this, an Englishman then living in Bangkok was certainly using the oracle to determine the outcome of the dispute. His name was John Blofeld and his experiences with the oracle later led him to produce his own translation of the Book of Changes—or Book of Change, as he preferred to call it.

Blofeld had happy memories of both India and China. As the two teetered on the brink of total war, he watched with something more than academic interest.

Frontier armies clashed in the remote Tibetan border region and the Chinese quickly added victory to victory. Like many another observer at the time—including commentators in virtually every Thai newspaper—Blofeld could see no reason why the Chinese should not sweep down to the plains of India.

He put the problem to the *I Ching*. His answer was hexagram No. 48, "The Well," developing into hexagram No. 63, "After Completion."

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On geographical considerations, Blofeld took "The Well" to represent India up to, but not including, its mountainous border region. From the Wen text and Confucian commentaries, he concluded—to his own surprise—that India would lose no territory south of the mountain frontier because the Chinese could not extend their lines of communication farther without serious risks.

When he went on to examine hexagram No. 63, his conclusions were reinforced. He felt the oracle was suggesting the time was ripe for a halt to the Chinese advance, possibly even allied to a minor withdrawal. In these circumstances, the *I Ching* promised the Chinese would hold their Himalayan gains.

These conclusions were so much at variance with the political predictions of the day that Blofeld actually wrote them down and showed them to several friends. He had the satisfaction of seeing the *I Ching* proved correct within two weeks.

The more deeply one studies the *I Ching,* the more one is forced to the conclusion that it is a very curious book indeed. Despite its predictive element, it is not deterministic—that is to say, it does not regard the future as fixed. There is room for free will. Answers advise more on the outcome of a moral course of action rather than stating flatly what will or will not happen. For an ancient oracle, the book is full of surprises.

Perhaps the most startling of these is the discovery that the hexagrams represent a binary system of arithmetic.

This discovery springs from an arrangement of the hexagrams developed by the Sung philosopher Shao Yung and shown, in part, opposite.

If you begin with the hexagram Po (marked on the diagram roughly at the six o'clock position) and move in an anticlockwise direction, each hexagram becomes a binary expression of the numbers one to sixty-four. The broken lines represent the zeros of the binary scale; the unbroken lines the ones.

You can test this out. Pick a number between one and sixty-four, then convert it into its binary equivalent.

For example, if you pick the number thirty, you should divide by two and keep dividing the result by two as shown in the calculation below:

2/30	
2/15	0
2/ 7	1
2/ 3	1
2/ 1	1
2/ 0	1
	0

The remainders (shown to the right of the main calculation) after the number has been divided by two until it disappears, represent the binary expression of the number.

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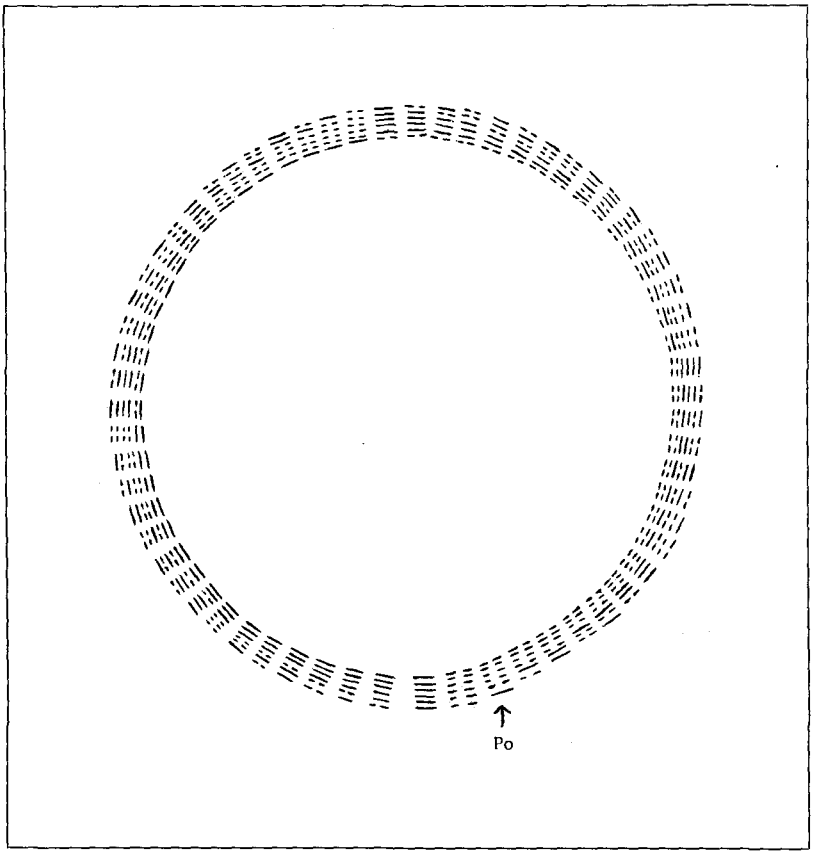

The Shao Yung arrangement of the hexagrams. *(The original diagram has a further arrangement in the form of a square set in the center of the circle, but this has been omitted here to avoid confusion.)*

Convert this into a hexagram by substituting an unbroken line for each one and a broken line for each zero—and, if necessary, adding broken lines (zeros) to complete the hexagram.

The result, in this example, is hexagram Ta Kuo:

Now count anticlockwise from the hexagram Po (counting Po as "one"). Ta Kuo does indeed occupy position thirty.

To suggest that the arrangement

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might be coincidental is stretching the laws of chance. But if Shao Yung knew what he was doing—that is, if he consciously developed a binary system of arithmetic—then Western histories of mathematics require to be rewritten.

Leibniz is popularly supposed in the West to be the discoverer of binary arithmetic. He first published his findings in 1679.

Shao Yung seems to have worked out his interesting diagram around 1060 . . .

The incorporation of a binary system into the *I Ching* places it in the same broad category as modern computers, or, for that matter, as the human brain. But it does not tell us how the *I Ching* works.

This problem attracted the attention of one of the great minds of the Twentieth Century, Carl Gustav Jung.

During the late 1950's, Jung sat beneath a tree in his Zurich garden and put question after question to the oracle. He was profoundly impressed by the answers, not so much by their predictive quality—although he recognized such a quality was often present—as by their appositeness and wisdom.

"Had a human being made such replies," Jung said later, "I should, as a psychiatrist, have had to pronounce him of sound mind, at least on the basis of the material presented."

He remained intrigued by the fact that the hexagrams provided him with consistently sensible answers, and in 1949 he set out, almost apologetically, to explain the phenomenon.

In a foreword to Richard Wilhelm's translation of the book, Jung remarks disarmingly, "I have no answer to the multitude of problems that arise when we seek to harmonize the oracle of the *I Ching* with our accepted scientific canons. But needless to say, nothing 'occult' is to be inferred. My position in these matters is pragmatic . . ."

But despite the disclaimer, Jung *had* an answer to the problems of harmonizing the disturbing phenomenon of the *I Ching* with modern science. The answer was synchronicity.

Synchronicity is perhaps the most intriguing of all Jung's theories. Stated briefly, it postulates an acausal connecting principle in nature.

During his days of clinical practice, Jung had one patient, Mr. X, complain of a sore throat. Mr. X was under treatment for an emotional disorder and appeared physically to be in the best of health. But Jung's medical training led him to suspect there might be more to the sore throat than a cold in the chest. He advised the man to see his family doctor for a thorough check-up.

Mr. X agreed, but on the way home from Jung's consulting room, he collapsed and died.

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At about the same time, Mr. X's wife phoned Jung in a state of high anxiety to inquire if her husband was safe. Jung, who did not yet know of his patient's death, carefully reassured her. Then, to satisfy his curiosity, he asked why she had panicked.

She told him a flock of birds had arrived at the window of her husband's bedroom.

The explanation of this curious statement lay in a family tradition associating death with birds. A flock had arrived at the window as the woman's grandfather lay dying. Years later, the same thing happened when her father was on his deathbed.

As Jung subsequently pointed out, Mr. X's sore throat symptom was not something which would tend to alarm a layman. Indeed, even as a fully-trained doctor, he had only suspected it might point to something serious. Yet Mrs. X was able to divine danger to her husband in the arrival of a flock of birds.

On another occasion, Jung was treating a woman patient whose analysis had reached a crucial stage where further progress seemed virtually impossible.

She told him of a dream she had had of a beautiful and unusual golden beetle. At that moment, there was a tapping at the window. When Jung opened it, a beautiful golden beetle flew in. Jung trapped it and handed it to his patient, saying, "There is your beetle." The experience proved so meaningful to the woman that it became a turning point in her therapy.

On the basis of incidents like these, Jung built up his theory of synchronicity. He argued that (for instance) the arrival of birds at a window obviously will not *cause* death. Nor does death attract flocks of birds.

Yet in the case of Mrs. X, Jung felt there was a connection between the sudden arrival of the birds and the death of the husband. But it was not a cause-and-effect connection. To Jung, the link lay in the mind of the observer (Mrs. X). The nature of the link was *meaning.* Synchronicity, the label he applied to this new connecting principle, was *meaningful coincidence,* the same phenomenon that brought the beetle to the window.

Jung's method of testing his theory was as bizarre as the theory itself. He turned to astrology as the ideal basis for synchronistic experimentation.

Here again, he argued that there could be no cause-and-effect connection between the positions of the planets and the actions of men. Equally, the actions of men could scarcely determine the motions of the planets. Yet astrology, a preoccupation of mankind for centuries, forged a meaningful link between the two. In short, astrology might be expected to produce a

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situation that is synchronistic.

Jung set himself to examine the birth maps (horoscopes) of a number of married couples. He was searching for the classical astrological conjunctions suggesting each pair would, in fact, marry one another. The conjunctions were there in a statistically significant number of cases.

Astrologers have hailed Jung's experiment as proof of astrology. It was, of course, nothing of the sort. (At best it might point to *some* truth in astrology.) But it was very suggestive of the validity of synchronicity.

Although Jung was very wary of introducing "a collection of archaic magic spells" to the modern public, he was nevertheless an honest man and an unprejudiced scientist. On an empiric basis, he discovered the *I Ching* produced results and more or less committed himself to the conclusion that the oracle reacted to synchronistic stresses as a thermometer reacts to fluctuations of temperature.

He wrote his foreword to Wilhelm's translation of the work because he thought there was more to the *I Ching* than met the eye. Observably, he was right; and his own discipline of psychiatry may yet see *I Ching* hexagrams used as a peculiar aid to therapy.

In psychotherapy, one of the most difficult problems is reaching those specific areas of a patient's unconscious where his trouble lies. One method already in use by Jungian psychiatrists is a technique known as directed reverie.

Here a patient is required to pursue a detailed fantasy under the direction of his therapist. As session follows session, he is gradually led to those archetypal realms where the roots of his problems might be found.

The technique has proved workable, but it has two drawbacks. The first is the time necessary to guide the patient to the relevant area of his unconscious. The second is the amount of skill and training necessary before a therapist can undertake to guide.

It is, however, entirely possible that both these drawbacks may be sidestepped should more psychiatrists take time to experiment with visualization methods which promise direct and *automatic* access to given levels of the unconscious.

These unorthodox techniques—all of which are based on the manipulation of symbols—are at present used by only a handful of therapists. The only comprehensive survey of them was, so far as I am aware, written by myself. And even this was not aimed at a professional readership, but merely presented a series of curious experiments (and their results) for the edification of the lay public.*

*Readers wishing to contribute to my next royalty check may buy a copy of the book, "Astral Doorways" from Samuel Weiser Inc., 734 Broadway, N.Y., N.Y. 10003.

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Within this area, the *I Ching* hexagrams promise the most fruitful field of research, although they are, unfortunately, among the most difficult symbols for patients to manipulate.

Briefly, the technique for their use is that the patient visualizes a given hexagram as if painted on a door. Holding this visualization as vividly as possible, the patient then waits for the door to open. When it does, he steps through the doorway by an act of imagination and thereafter acts out the fantasy which confronts him, exactly as he would do in the more orthodox form of directed reverie.

This approach is simpler to describe than carry out, but even so, results can sometimes be out of all proportion to the initial effort. The hexagram appears to work directly on the unconscious mind and the exercise in visualization will sometimes trigger a trance state. When this happens, results can be spectacular.

A striking example is reported by the American travel writer, William Seabrook.

The experiment took place in a studio overlooking Washington Arch in 1923. Participants were Seabrook himself, a friend who owned the studio and a Russian refugee of aristocratic origins named Nastatia Filipovna. The experiment was also witnessed by a British vice-consul of the day.

Madame Filipovna had known Rasputin in Russia and was (although not necessarily as a result) prone to trance experiences. Seabrook describes her as "a neurasthenic hyper-imaginative type, already addicted to occult escape mechanisms."

The hexagram she drew was Ko, which means "Revolution, Molting, Leather or Skin." In its original sense, the Chinese ideograph for the hexagram means an animal's pelt, which is changed in the course of the year by molting. The hexagram looks like this:

For the experiment, Madame Filipovna knelt in the semi-darkened studio for a period of some three hours during which, with rare patience and ability, she visualized the hexagram superimposed on a closed door.

At one stage she groaned and her body slumped. Although she did not fall, it seems fairly clear that she had sunk into trance. Later, she informed the witnesses that her imaginary door was opening and she was passing through it.

What follows is an abbreviated version of her description of subsequent events:

". . . I am outside now. I am lying in the snow . . . pressed against the snow . . . I am not cold . . . I am wearing a fur coat. I am lying naked in a fur coat . . . flat

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with my belly and chin on the snow I lie . . .

". . . I am moving now . . . I am crawling on my hands and knees . . . I am running on my hands and feet, lightly . . . now!now!now! . . . I am running lightly like the wind . . . how good the snow smells . . . faster . . . faster . . . faster . . ."

At this stage she was panting heavily and drooling. She began to yelp, then howl. Her observers were understandably disturbed and the vice-consul attempted to terminate the experiment by slapping her sharply and calling on her to wake up.

Her eyes opened, but she was still in the grip of her experience. She snarled and tried to take the man in the throat. Fortunately for him, her body had grown stiff from holding the same posture over several hours and she succeeded only in falling.

She crawled into a corner where the three men eventually trapped her with the aid of blankets and brought her out of the trance by holding ammonia under her nose.

Although such experiments are weird, it is still possible to echo Jung's remark that nothing occult is to be inferred from them. Depth psychologists are well aware that atavistic urges often lie buried in the darker realms of the human mind. Usually they remain buried, but the relevant key can sometimes release them.

Toward the end of the Second World War, psychiatrists discovered a highly successful therapy known as abreaction. This was usually brought about by means of analysis and drugs. Analysis guided the patient to the root of his troubles. The drugs enabled him not merely to remember painful experiences, but to relive them.

As a result, the emotional charge "locked into" these experiences was released from the unconscious and flowed out to provide relief of symptoms. The technique proved particularly successful in cases of "shell shock," where the experiences which caused the trouble were known to the psychiatrist. But difficulties tended to arise when the root cause was unknown and the patient, even when helped by analysis, refused to face up to it.

In view of the success of directed reverie, the remarkable results of Seabrook's experiment and Jung's experience that the *I Ching* tended to throw up hexagrams which went mysteriously to the heart of the questioner's psychological preoccupations, it is not too much to suggest that serious experiments in oracular psychotherapy seem a little overdue.

What, one wonders as this article draws to a close, does the *I Ching* think of all that has been written? The Chinese, of course, personified their oracle and, using it, one can easily see why. The *I Ching* reacts

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to questions like a person. One can almost see hovering above the printed page the dignified ghost of an immensely wise and ancient Chinese sage. What does this sage think of my attempt to tell an open-minded section of the U.S. public about his past history and his possible future? And perhaps more important, how does he think the readers will take to this information?

With the article complete to this point, I put the questions to the *I Ching* using the coin oracle.

In reply to my first question, "What is your opinion of my article?" I received the hexagram Shih:

developing into the hexagram K'un:

Shih means "The Army" and King Wen's text promises good fortune and freedom from error—the

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latter a point very much on my mind because of the complexities of my subject matter. Emphasis on one of the lines, a nine in the second place, reinforces both these promises and adds that a "triple decoration" might be expected from the king.

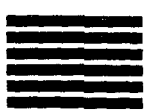
K'un is the "Receptive," or "Passive Principle," and is closely linked in the *I Ching* to the action of creativity. The text promises "sublime success" but adds, "At first he goes astray, but later finds his bearings. It is advantageous to gain friends in the west and south, but friends in the east and north will be lost to us."

Overall, the sage seems well enough pleased with my work. I did indeed "go astray" in my first attempt at the article and only later found my bearings in a maze of references. What was lacking originally was personal discipline—something usually corrected by the army.

Gaining friends in the south and west is amplified in the Confucian commentaries to mean making friends with people of one's own outlook. The statement is interesting in the light of the oracle's answers to my second question.

My second question asked, "How do you think Analog readers will generally react to the article?"

The reply was hexagram Ch'ien:



developing into hexagram Sung:

Ch'ien means "The Creative" and is perhaps the most fortunate hexagram in the entire book. Sung, however, means "Strife or Conflict" and warns that unless developments are treated with great caution, good fortune cannot be maintained and disaster will be the end result.

Taken together, the hexagrams seem to promise a very mixed reader reaction, probably with a high degree of enthusiasm showing in the early stages, but controversy and opposition creeping in later.

When this happens, the oracle advises me to remain calm and ready to negotiate, to be prepared to submit my case to higher authority and trust that justice will be done.

Referring back to the *I Ching*'s earlier remarks about gaining friends in the south and west, I am reminded how articles fringing on the esoteric tend to strike deep chords in a certain type of mind—a type to which I happen to belong. As a result, I expect the article to excite the interest of (make me friends among) people of like mind, while those who still find parapsychology unpalatable will make up the bulk of readers massing in opposition.

Over to you then, friends and foes . . . ■

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stimulus-reward situation

Some people never learn that they have nothing to teach.

Gene Fisher

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"Welcome, Commissioner Rail. Glad to see you on-planet," Kinser, the undersection chief, said as he stepped forward with hand outstretched to where Rail stood in the door of the airboat.

"Thank you, Chief . . . ?"

"Kinser, sir."

"Yes, thank you, Chief Kinser." Commissioner Rail stepped onto the loose, drifted sand of the beach. Pursing his lips, he surveyed the island which was to be his headquarters. A warm, moist breeze stirred the cropped hairs on his head, then moved on to stir the fronds of the purplish trees farther up the shore. A bright and translucent atmosphere, gently rolling waves, and a warm, earthy scent completed the picture. To a human this was a place of idyllic peace and calm. Too calm to suit Rail, who turned to face Kinser.

"Where are the natives? I was given to understand that this was a heavily populated planet."

"Yes, sir, it is. As a general rule you can always see a Gangsha somewhere around. But for some reason they never settled here, that's why the island was chosen as a base when setting up six months ago. There are plenty of them on Miyo, that's the next island over there." He motioned toward a dimly visible smudge on the southern horizon. "Here, as I said, there are none."

"Just as well. No need to have the natives underfoot, at least until we're ready to help them. Show me where I'm staying, will you? And send a man to collect my luggage. It was a rough trip down, pilot said something about atmospherics."

Turning on his heel, Rail set off toward the cluster of huts visible down the beach. Kinser followed, amused as Rail tried to keep his footing while walking through the soft sand in space boots. He, on the other hand, with both feet comfortably encased in homemade sandals that allowed the sand to sift through and tickle his toes with pleasant warmth, had no trouble negotiating the slippery surface of the beach. Six months had done much to wear off the square corners imparted by the social tech regulations.

Except for one incident, there was no difficulty in settling Rail in his small prefab. The crewman who had carried Rail's bags, one of the original members of the crew that had set up the base camp, had paused a second before leaving. That pause was at the command of Rail, who looked the man over from rag-tied head, down past the loosely fastened singlet, to the sandaled, dirty feet. He had then dismissed him with a curt nod. After the man's departure, Rail rounded to face Kinser.

"Chief Kinser, isn't there a copy of the dress rules located somewhere in this base camp?"

"I don't know. I imagine there's one around here somewhere. I can

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get one from the supply ship, if you feel we need it."

"We do, Chief Kinser, we do. I do not wish to criticize unjustly, but there seems to be a deplorable lack of discipline on this planet. Take yourself, for instance."

"Myself, sir?" Kinser looked down at his clothes, virtually a carbon copy of the crewman's who had just left. "What's wrong with them? Oh, of course, I know they're not what we'd wear on a civilized planet, but here on Connemara they're appropriate. It gets a little warm, as you'll find out this afternoon."

"Do not lecture me, Chief Kinser. I've read the scout reports on this planet. But the purpose of our being here is not to have a vacation, nor is it an excuse to relax the rules or discipline. How will the natives learn to respect us, if we do not conduct ourselves as civilized beings?"

"But Commissioner, all the natives go naked! That is, they don't wear anything, except their fur. Moreover, there are no natives here on the island, so how will they see us?"

"Nevertheless, good habits are developed through practice. Once the project is well established, I intend to bring a few of them here for advanced instruction. Please give the order that from now on all crew members are to wear proper clothing. That means boots, tunic, and a decent hair arrangement."

Kinser was mildly irritated by this pettiness, but his face did not show it. "Yes, sir. Will that be all, sir?"

"Yes, for the moment. Have my lunch brought here at 12:30 hours, I have some reports to read until then. Also tell the men that I wish to speak to them at 13:00 hours in the mess. You may go."

Kinser spun on his heel, admittedly difficult to do in sandals, and clumped out of the prefab. Except for a slight tic that fluttered his left eyelid in time with his pulse, he did not show the implied criticism of Rail's remarks. As he passed the word about dress, he wondered about the impact a man like Michael Rail, Social Administrator Fifth Class, would have on a nice easygoing planet like Connemara. The impression of the first half hour had not presented him with anything to look forward to. Well, time had a way of smoothing all things, including stiff-necked martinets.

Rail's meeting with the assembled men, who were already irritated by wearing tunics in ninety-degree weather, added another dimension to his personality. After bringing the meeting to attention, he gave a speech:

"Men, as some of you are aware, I am the new commissioner for this planet. My name is Rail, Michael Rail. I called this meeting to get acquainted and tell you a few

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things. Most of you are, I see, already adhering to the standard dress regulations. Good. Continue to do so and the habit will remain when you are viewed by the Gangsha. The other thing I want to mention is the importance of our mission here on Connemara: to educate the Gangsha, by example and instruction, to our level of civilization. We are here as trustees, bearing the torchlight of civilization to this race. I expect you to conduct yourselves accordingly, both as men and as members of the social tech team assigned to this planet. That is all I have to say. Are there any questions? Please state your names on rising."

Smitty, chief cook, clown, and general good fellow of the entire work crew, raised his hand. Rail pointed to him.

"Smith, sir. Pardon me, but what if the dogs don't want to learn? Whatta we do then?"

"Dogs, Mr. Smith? Who are they?"

"Why, the natives, sir, the Gangsha. We've nicknamed them dogs because their faces are doglike and they're always sitting or lying around doing nothing. Like a dog does."

Rail's face turned scarlet. "Mr. Smith, in the future, you," he glared around at the fifty men before him, "and all the men here will refer to the Gangsha as 'the Gangsha'—not by any nicknames. This is an intelligent race, albeit a little slower than we are as yet; but that'll come, that will come. Meanwhile, treat them like the civilized race they'll be when we're through." Rail paused, his anger now partially cooled. "You men are dismissed. We begin phase two on Monday morning."

In the space of four or five minutes no one remained in the mess except Kinser and Rail. The latter walked over to a window and stared at the waves rolling onto the white sand beach before him.

"It is apparent, Chief Kinser, that this base has gone rapidly downhill without a strong guiding hand. I hold you responsible for this; it will go in my report. Dogs, indeed! Tell me, how did such a ridiculous nickname get started?"

"Just as Smith said, Commissioner. They are vaguely doglike in body form. And their customs bear resemblance to dogs on Earth. For instance, they'll sleep twenty-four hours out of twenty-eight, with the rest of the time spent in either eating or running around for exercise. The Gangsha are not the most energetic race, no need for it."

Rail's eyes sparkled. "Then we have a challenge before us. One worthy of my—our—talents as social engineers. Doglike or not, it is our duty to raise them to our level."

"That may be so, Commissioner. But what if they don't want what we offer? They aren't very industrious."

"Then we shall have to motivate

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them, shan't we? I hope to make an important mark here, Chief. This is my first assignment as a social commissioner on a class-five planet. This is the place to get into the habit of success, then it will continue, as a habit, on my next assignment."

"Yes," Kinser replied noncommittally. Having had some close association with the Gangsha of Connemara, he had his doubts as to their malleability. But that was Rail's problem. Rail resumed:

"I have read the reports concerning this planet, including yours. What do you believe will be our main problem here, aside from the geography? That just means more men, one for each island. Where are we liable to encounter problems?"

"As I mentioned in my report, I don't think the Gangsha will take to what we have to offer. They and their culture are, after all, pretty well adapted to this planet. Mean annual temperature of eighty degrees, no storms to speak of, and no competition as far as dominant wildlife. The paleontologist says they've been the dominant lifeform here for at least twenty-thousand years. Their social structure is narrow, with no wild elaborations in culture. What it boils down to is that they don't need anything we have. No problems and no competition means no success drive."

"Hm-m-m. That agrees in the main with what the reports said. Well, we'll just have to inject a serpent into their paradise, to use an old metaphor. As I told the men, phase two will begin on Monday morning. Have the pilot islands been selected and the equipment readied? The sooner we start, the better."

"It's all ready to go. Do you want to tour one of the villages? There's one quite close, on Miyo."

"Yes, we'll go out there tomorrow. Have an airboat ready at 09:00. Until then, I'll be in my prefab if I'm needed. I have to rest, this heat takes getting used to." The commissioner marched out of the mess, back straight, and over to his prefab. Kinser watched him go, shaking his head sadly. Three months ago he had recommended that the project here be terminated and the planet declared off limits. No answer. From the looks of things though, the only serpent liable to be introduced into this paradise was Commissioner Rail.

The next morning dawned bright and clear, just as it would every morning on this planet of perpetual summer. Promptly at 09:00 the commissioner boarded the airboat, and with Kinser as pilot, flew to the native settlement on Miyo. By human standards it wasn't really a settlement or even a village, unless a small collection of roofed posts constituted one's definition. The population of this community, from what Kinser had been able to

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gather, was extremely fluid and the cultural concept known as the family was nonexistent. Contact-wise, one or two of the Gangsha had managed to learn a form of pidgin trade talk, but not much. Kinser explained most of this to Rail during the trip over from the base camp.

The airboat landed on the wide beach, close to the mouth of the stream on which the community, for want of a better term, stood. The two men got out and walked toward the shed-houses.

This island had the hypnotic beauty characteristic of the entire planet. Gently rolling hills that graded toward the stream and the sea rose tier on tier toward the island's center. The purplish color of the vegetation shaded darker and darker until, at a distance, it was a black coat that covered the hills. Remarkably, when viewed at close quarters, the plants themselves were not crowded: each plant seemed to keep its distance from another so as to allow all of them the proper amount of light and air. With the sun high in the sky and the sea as a backdrop, it created a picture almost too perfect for the humans to appreciate.

They were not long on their path before Rail met his first Gangsha, or rather, tripped over him as he lay in the middle of the path. A gray furry body, perhaps six feet long, with a lupine head was stretched there. Its legs were bent at an odd angle, but other than that there was nothing particularly doglike about it except the head. Set into the protruding muzzle of dirty grayish-white were four very prominent canine teeth. Even in repose and snoring the Gangsha looked ferocious. But Rail had had experience with many other races who, if judged solely on human criteria looked just as vicious, yet in reality were gentle as doves. Besides, the reports had said that none of the Gangsha were dangerous; indeed, no fighting or competition seemed to exist among them.

Rail spoke to Kinser in a low tone. "Do they always sleep like this? I mean, during the full day and so forth? When do they work or eat?"

"I'm afraid this is normal, Commissioner. They're not as energetic as we are. As for food, see that tree there?" He pointed to a low bush on the right side of the path. "Those round things on it are what they normally eat. We had them analyzed and they have all the proteins, carbohydrates, and fats that they need to thrive. Better still, the trees produce year round. These 'fruits' and water are all they need."

"But the teeth? What are they for? Judging solely by appearance I'd say they were carnivores."

"Paley, he's the biologist, says they're not. The teeth are apparently evolutionary holdouts. They

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do make them look vicious though, don't they? Actually they are extremely gentle, you might even say torpid."

They skirted the sleeping Gangsha and proceeded to the community. Shrill shouts of the Gangsha young greeted them at first, then stopped as they walked into the community circle. There were perhaps as many as twenty-five of the adult Gangsha sleeping, lying propped against trees or under the lean-to roofs, or simply resting from what might have seemed hard and futile labor. The only movement had been from the young and it had stopped. Both men stood in the center of it all. Five minutes of waiting produced nothing, except that some of the youngsters fell over in position and began to snore with high-pitched sounds. The wind sighed in the leaves.

"Don't they have a headman or something? Someone we could speak to?" Rail asked Kinser.

"No. There isn't much social organization, no need for it apparently. One or two speak trade of a sort, but you'll have to wait until one of them wakes up."

"But, but . . . who apportions work? How do things get *done*? Do they do nothing but eat, sleep, and copulate?"

"That's about it from all we've been able to see. All over the planet it's the same thing—plenty of food, perfect weather, and quiet, sleeping Gangsha. It makes you wonder how they survived at all. Sheer inertia, I guess."

Rail looked around, a frozen expression on his face. "We'll have to do something about that," came a half audible phrase. Then louder: "Let's go back to base, there's nothing we can do here." Action suiting words, he reversed himself and marched back to the boat, Kinser in the rear.

Phase two of the project began promptly at 09:00 hours on Monday morning. Twenty airboats, equipped with technical equipment—automatic teachers, tape libraries, and other educational aids—each manned by a social tech, set off on their missions. Each would go into one of the known Gangsha villages and erect a teaching post. After a given period of time, the natives trained there would serve as a nucleus to train others until the entire population was ready for phase three, or elementary technocraft. In the timetable set up in the mess on the commissioner's order, that was to occur in four standard months.

Commissioner Rail stood beside Kinser and both silently watched the teams fly off into the bright horizon. "Well, Chief, it's the dawning of a new day for Connemara and the Gangsha. In a month the first progress reports should be coming in. I'm looking forward to them, for they'll vali-

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date our reasons for being here. Being a social tech is a tough, but satisfying, job." A sort of half-grin, half-hopeful expression flitted over his face, then it relapsed into its customary look of mild distaste. The latter matched the inward opinion of Kinser toward Rail, though he had not as yet shown it.

"Yes, Commissioner, it's a new day. Though I have reservations about the speed with which the Gangsha will learn what we have to teach. From all indications, their culture is not oriented in that way. The instruction hasn't much use here as far as applications go."

"Nonsense, Chief Kinser. After all, what choice do they have? No native culture can survive unchanged under the impact of galactic civilization. Why, that's the basic reason we're here, to ease that inevitable transition. As you know full well."

"I don't want to cry wolf, Commissioner, but from the way I see it, the Gangsha are happy here and well adapted to their environment. Actually, they've nothing of a trade nature that we've been able to discover. Although I'm not privy to Council decisions, I am curious about our real purpose here."

"If you must know, Kinser, it was done at my instigation. At the time the report on Connemara's discovery was entered at Social Tech Headquarters, I was in charge of the processing division. Something about the report seemed too good to be true, too like a paradise. So, at my insistence, operations were set into motion to civilize this planet. I was also placed in charge to acquire some field experience."

And to prevent you from bungling a more important project, was the thought that followed in Kinser's mind. Aloud: "Perhaps you're right, Commissioner, and everything will turn out all right. I recommended that this planet be declared off limits, but it seems I was overridden at Headquarters. And now if you will excuse me, I have some work to take care of." He gave the commissioner a salute and walked away.

In a month the reports began to trickle in from the outlying posts on the other islands. In that same month of summers Kinser had had about all he could stand of the commissioner. His conversation, filled with endless platitudes about the service and unleavened with the slightest amount of field experience, had led Kinser to spend more and more of his time at the Gangsha settlement on Miyo. While there, he had increased the trade vocabulary of Kiha, one of the natives, by another fifty words or so. No mean feat, considering that every few minutes the Gangsha drifted off into a deep sleep. Kinser was engaged in another attempt to rouse Kiha when the radio of his airboat began to give off its keen-

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ing whine. He went over and flicked the switch on the dash.

"Kinser here."

"Kinser, this is Commissioner Rail. Have you seen the reports?"

"One or two of them. Nothing too unusual, barring a certain lack of progress." He gave a glance at his erstwhile pupil, now sound asleep, muzzle emitting remarkably humanlike snores. "Considering the Gangsha, it was no surprise."

"Well, four more have come in this morning and I've just finished listening to the tapes. 'Certain lack of progress' is not the term for it; *no* progress would be a better fit. Do you realize that none of the Gangsha, not one, has even offered to try and learn what the social techs are teaching? What's wrong with them, don't they realize that we're trying to ease their way?"

"These things take time, Commissioner. Besides, all the reports aren't in yet." Kinser resisted the urge to say, "I told you so"—why add fire to the insult Rail evidently felt? "When all of them come in, we'll run them through the computer and see if any pattern can be developed. Until then, there's nothing much we can do."

The voice replied, calmer now: "All right, Chief, we'll see what develops. As you say, there's not much we can do. But I have the feeling . . . let's say, I think there's something funny going on here. See me on your return to base. Out." The click of the switch cut off further words. Kinser returned his attention to the now stirring Kiha, stretching out of his nap.

"Ah, Kiha," Kinser said in trade talk. "Want you more learn?"

"No, Kinse." The Gangsha had not yet learned to form the *r* sound, their native language did not possess one. "Feel hungwy. Will eat and . . ." a string of incomprehensible Gangsha followed, then: "maby late." Kiha rose and weaved off into the bushes on his powerful legs. Kinser shook his head and boarded his airboat for the trip back to base.

Within three days all twenty of the monthly reports were at base. They simply augmented the first ones received: that is, no Gangsha had made use of the established learning facilities. As he had said, Kinser ran them through the computer, but the only recognizable pattern seemed to lie in the nature of the Gangsha themselves. They didn't need any education, saw no reason for it, and therefore failed to use the facilities.

"But how could they refuse?" Rail fumed. "Don't they realize what a gift we're bringing them? For twenty thousand years these Gangsha, these . . . dogs, have lain in this paradise without so much as a single effort to improve themselves. It's . . . it's disgraceful."

"I wouldn't say that," Kinser replied. "Whatever they could learn would be of no real use to them. For what would they need it? A

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perfect world and perfect adaption to its requirements. They're happy, why disturb them?"

"Because, Kinser," the commissioner's voice was edged with venom, "this is an expensive operation that was designed to aid the natives with or without their consent. Do you believe that I would allow a black mark against my record simply because they refuse to learn? No, if kindness won't work, perhaps force will."

"I warn you, Commissioner, that I will not tolerate any assaults on the Gangsha or their social structure. As you are aware, the service has failed before, usually because of some oversight on the part of the administrator involved. But every planet is different. I cannot stand by and see you injure anyone."

"You will, Chief, you will. One way or the other. I give you a choice: either continue as my second here on this project or be locked in your quarters until the next supply ship arrives. Take your pick; either way I will carry forth the project here."

It was in Kinser's mind to tell the fool to go hang, but he simply couldn't take the chance. There was no telling how far the man would go without some kind of check on him. "Since you put it that way, Commissioner, I will continue on as second, under duress. How do you propose to educate an unwilling Gangsha?"

"Simplicity, itself. From all we've been able to observe, they've never been without food or sleep for an exceptional period of time. We'll simply deprive a Gangsha of either until it consents to learn; probably the food first, since that's the easiest. Paley tells me they can take it. Once the barrier has been broken, we'll use the trained one to teach others and set the ball rolling. I've already given orders that a compound be built here at base. When it's completed, we'll get a native or two from Miyo and stock it."

Kinser was appalled by the man's ruthlessness. "These people are not really dogs to be taught by simple conditioning, Commissioner. Don't you think that this is a little dangerous?"

"Only if we don't get results. And it will work, I assure you. The end sometimes justifies the means, as in this case. When the compound is completed, go over to Miyo and get a couple of Gangsha. You spend enough time over there, should have quite a few friends." Rail gave a nasty giggle. "Make sure that at least one of them speaks no trade—I want an uncontaminated test of this procedure. You're dismissed, Chief." Rail turned his back and strode to his prefab. Kinser felt sick.

Building the compound took only two days. It was a simple fence, fifteen feet high, surrounding a fifty-square-foot area. Inside was a hut for the Gangsha and a table

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set up for the educational equipment. The door in the wall was keyed to respond to human electromagnetic brain patterns, in this case, only to Commissioner Rail's. When Kinser asked him about it, he replied that he was the one who would run the experiment and he didn't want any interference. To forestall this, Kinser had an emergency override installed on the door just in case. When the compound was completed he went over to Miyo and talked to Kiha.

"Kiha, I need help. Need you, other Gangsha help me. Come over my nest-base. Yes?" He felt like a traitor selling out, but persisted because he knew that Rail was quite capable of sending someone to force two natives over.

"Yes. Will bwing nest-mate-bwothew Meta. We go, now?"

"Yes, if possible."

The Gangsha shambled over to one of the covered sheds with its crooked walk. Kiha spoke rapidly in Gangsha to one of the others lying there. This worthy lumbered to his feet and both went over to the airboat and climbed in. The trip over was uneventful, except that the Gangsha's first reaction to an airboat ride was to fall asleep leaning against one another.

Kinser landed the airboat by the compound. Rail was there, waiting with a satisfied smirk on his face. Kinser walked over to him, leaving the two Gangsha undisturbed.

"Excellent, Chief Kinser, you'll make a social tech yet. Which of them is the trade speaker?"

"The one on the right, Kiha. Meta, one of his relatives, is the other."

"Good. Take Meta and get him into the compound."

"First, Commissioner, I want to know what you're going to do to him. As I told you, I don't want the Gangsha hurt, for any reason."

"I'm simply going to deprive him of food until he consents to learn, a stimulus-reward situation. Most lower forms of life respond to such conditions. I'm sure the Gangsha will also. A few days should do it."

"I give you one week, Commissioner." Kinser had already checked with the biologist and discovered that such a limit was well within the Gangsha's tolerance. "At the end of that time, he comes out. Do I make myself clear?"

"Save your threats for war, Kinser. I'm sure that even within your short time limit, some results will be obtained. Enough to vindicate my methods and show a little success for our months of work here." His voice rose to a shriller tone. "We must, my career depends on it."

Kinser did as he was told, waking up the sleeping Gangsha and getting through to Meta, using the medium of Kiha, what was desired of him. The Gangsha lumbered out of the airboat and into the compound. Inside he made a beeline for the shed, leaned against one of

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its posts and promptly fell asleep. Rail closed the door on him.

"In three days, Chief, I'll begin. We'll see what results my technique achieves."

Three days later, carrying a bag of the purplish fruits, Rail went into the compound. The door closed behind him. Two hours passed and he came stomping out, bag still full, and headed for his prefab. Although he didn't say anything in the mess that night, Kinser gathered from his expression that the Gangsha did not rush to be educated.

The fourth, fifth, and sixth days went by in the same manner—each day Rail entered the compound with a full bag of fruit and left some two hours later, full bag in his hand and a scowl on his face. Each day it became more and more obvious to everyone but himself that he was failing. On the seventh day, Kinser was waiting at the compound door when Rail arrived. He was surprised to notice that the man wore a shocker on his hip, an advanced form of crowd controller. Rail was about to brush past him without speaking when Kinser put his arm between him and the door.

"One moment, Commissioner. You have now had one week. This is the last day of your experiment: win, lose, or draw, Meta comes out tonight."

"Do not order me, Kinser. I am the commissioner here and what I say is law."

"Not if no one will obey you. As I said, Meta comes out tonight. One more thing. What's the shocker for?"

Rail looked down guiltily. "Ah . . . for protection, of course. Did you think I was going to hurt your precious dog?"

Kinser withdrew his arm. "See that you don't, Commissioner," he said curtly and walked away. Behind him he heard the door of the compound close. He was just entering the door of his prefab when he heard the scream.

Kinser set off at a dead run for the compound. The screams came apace, of unearthly piercing notes which ended abruptly in a gurgle. They made the hair on the back of his neck rise. The other men in the area were futilely beating against the door when he came up. He flicked the override and entered, fully expecting to see a dead Gangsha—martyred on the altar of Rail's career.

Inside, lying in a pool of bright crimson, was Rail, his throat torn out and face chewed to shreds. The shocker was still gripped tightly in his right hand. Off to one side, squatting on his haunches and eating fruit out of the bag, was the Gangsha, Meta. Traces of blood stained his face and teeth. He paid no attention to Kinser in the doorway.

Kinser turned and gave an order to the first man behind him. "Get the other Gangsha here, quickly."

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When he turned, Meta had already lost interest in the fruit and was peacefully slumbering on the ground beside the man he had killed. A snore soon shook the compound. Kiha came loping up. Kinser let him into the compound and closed the door behind him.

"Kiha, you find what happen. Meta kill commissioner. Why?"

The Gangsha gave a nod and went over to the other sleeping form. A guttural conversation ensued, punctuated with yawns on the part of Meta and arm waves from Kiha. When the conversation was over, Kiha returned to Kinser.

"Meta say commissionew not like you. Say commissionew want Gangsha eat him. Meta no want, so commissionew no feed Meta. Twy to make Meta by no feed. No undewstand Gangsha."

"But . . . commissioner not want Meta to eat him! Only want Meta to learn. Try to force him by hunger and not feed."

"No. Not it. Meta say simple. Gangsha once like beast, eat all things. Even beasts. But not now, only eat bushfwuit which ha'm no thing. Is bettew way fo' beasts and Gangsha. Commissionew no leawn that. Meta say he no able to not eat much longew. Ask Commissionew fo' bushfwuit. Commissionew hit with hot stick. Commissionew attack like beast. Meta say only one thing do. Kill beast. But no eat him, eat bushfwuit instead. All happy but beast, and he dead."

Kinser looked at him wishing he could explain, but it was useless. It was obvious that Meta had misunderstood what Rail's intent had been, though that mistake was not half so glaring as the one which the commissioner made that cost him his life. In every way the commissioner was responsible for his own death and with him had died any reason for the social tech team's presence on Connemara. Kinser opened the door and gave orders for the commissioner's body to be removed and the stockade torn down. The two Gangsha he would return personally to Miyo. Then he went to his prefab to think.

Three weeks later, after a supply ship came and removed Rail's body and most of the remaining equipment and personnel, Kinser sat in the same prefab looking out over the blue sea. At his recommendation, Connemara and the Gangsha had been declared off limits, and tomorrow another ship would come to take himself and the rest off-planet. All he had left of his official duties as chief of section was the final report for the Social Tech HQ. He had been sitting before the blank pad of paper on the desk in front of him all morning, trying to think of a diplomatic way to say what had to be said. Finally, he took the stylus and wrote the report's title in bold letters across the top of the page:

"Let Sleeping Dogs Lie." ■

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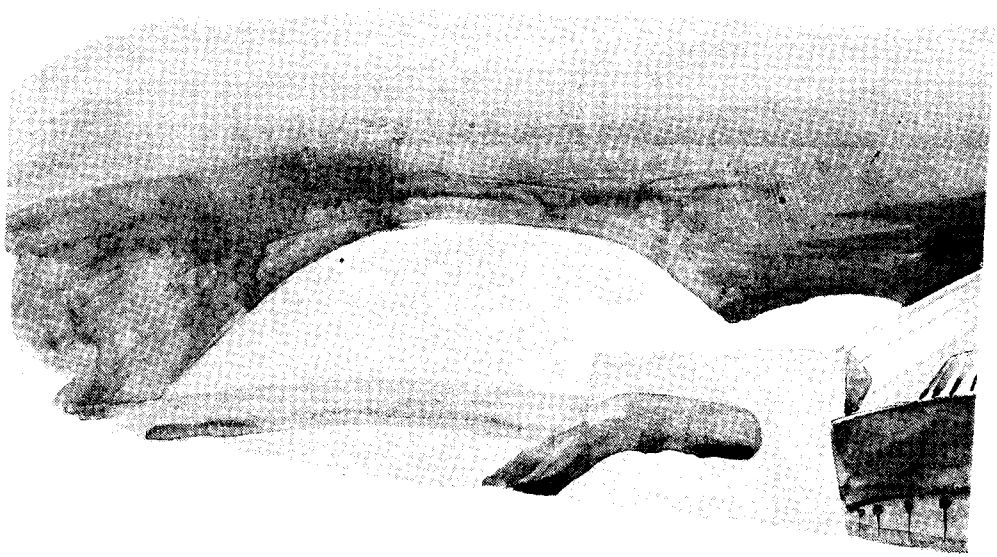
Robert Chilson

forty days and nights

All life forms follow one simple law—adapt or die. But sometimes it's not so simple!



JOHN SCHOENHERR

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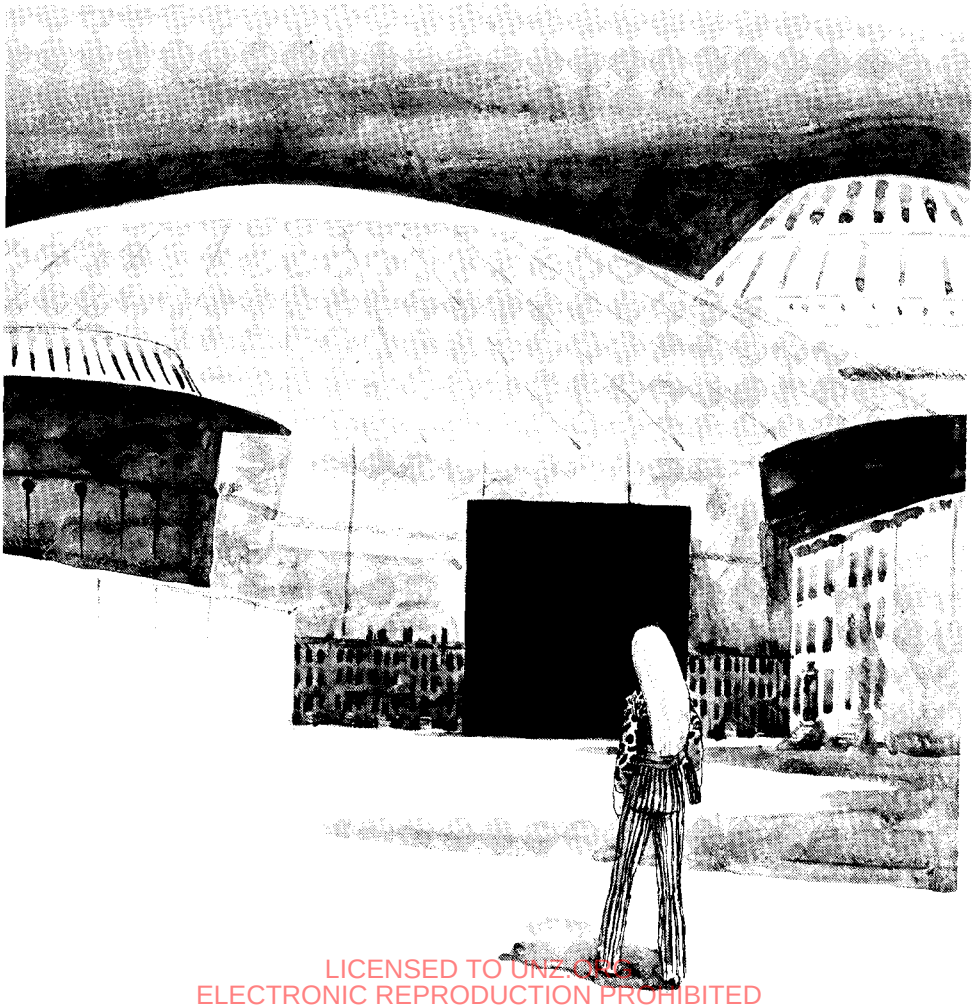

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Tedi Sorenson stepped in front of the icon, tossed back her wave of silvery hair. Her image in the visiplate was serious, the pouting mouth and small frown between her eyes giving her an appearance of childish intentness compounded by her tiny figure. She sighed, ran a hand over her bare body. She was not beginning to sag, but she felt that she was. Though alcoxidants minimize intoxication and eliminate hangovers, she felt dragged-in.

"Tedi? Have you seen this?"

Turning away from the icon, Tedi padded into the apartment's common room. Michel Ferron, her current, gave her an abstracted look and handed her a shirt-pocket-size libriscope. The logo in its visiplate was that of *This World Is Your World,* SAVE's organ.

"Israelis Interdict Sinai!"

Dismayed, she read in snatches: "Evacuation of half a million . . . Average half-life of one year . . . No prospect of decontamination in the next decade . . . Total destruction of local ecology . . . Reversion to desert? . . . Irrigation system to be maintained by remote control, according to informed sources . . ."

"That'll be a bone of contention for the next half-century," she said, sick.

"Is that all you can think of? There're thousands of square miles seeded with radioactives and all you can think about is an out-of-date conflict."

Tedi looked at him fondly. He slumped in his chair with a worried-collie look accented by his drooping moustache and the ropes of long brown hair that framed his face. Privately she thought the current style did not suit him. But his kicked-puppy look touched her.

She crossed to him and cradled his head against her. "It's not as bad as SAVE makes it look, hon. With Chinese help, the Islamate will have it decontaminated in four or five years, no doubt. Israel is merely buying time. China is already committed to help, you know. This will earn them more support than guns. And it's not as if the Israelis started it. Who first used mininukes?"

Impatiently he pulled away. "Damn it, that's not it. What counts is impact on the ecology. A clean miniature fusion bomb actually has less effect than a much smaller chemical bomb."

"But it kills more people."

He shook his head, ran a hand over the short hair in the back. "Only in the short run—in the end, ecological collapse will take ten times as many. Despite the Green Revolution, there are more starving people in the world than in 1950. Besides—if these people want to kill each other, comes the time, let them die. It's *their* way of life; why should we get involved? It gains us nothing but hatred. What business is it of ours?"

"It isn't, much," she said

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patiently, sighing. "But it's vital to Europe, and Europe is important to us. Oil is more valuable than ever since we stopped burning it."

"Don't we know it," he said bitterly. "The same old answer—money. Imperialism is dead, but the advanced nations suck the blood out of the emerging nations faster than ever."

There was no point in arguing with him. Troubled, Tedi went to get dressed. With her tiny figure and platinum-blonde hair, the modern "incandescent" fabrics were not for her, except in white or silver. Today she didn't wish to be so conspicuous. *Something conservative . . .*

She thought a lot of Michel, but she was beginning to doubt she loved him. At least, he only aroused the genuinely tender feelings when he looked particularly lost and alone. Hardly a compliment. Did she really respect him enough to love him?

Tedi donned tight black pants with vertical white stripes, almost as much white as black. The blouse was white with black, beginning to be a bit tight. *Got to attend fewer of those damn diplomatic-public-relations parties . . .*

In any case, there was no changing his opinions. He was first-generation commune, and frequently looked lost. There'd be no going home for him—the advance of progress had wiped out the communes.

A bright yellow sash to add a bit of color, silver shoes . . .

Breakfast was sober. "Have you seen this?" Michel asked. He was not sullen, merely somber.

Another of SAVE's scareheads. Weather control, a vastly complex subject.

"Hon, I haven't time to read my own pro journals. What is it?"

"Proposal to use f-rockets for weathercon."

"What's wrong with it?"

"Jesus! Don't you know that the exhaust of a fusion rocket is twenty percent radiohydrogen? And that's when it's in perfect tune!"

Tedi sighed. "Michel, Michel . . . do you know how much energy there is in a pound of matter? So a few pounds of mild, short-lived radioisotopes may be blown into the air. So what? We've been on top of the radiolution problem since we learned to burn most charged-particle isotopes in alpha-betagens, and started dumping what we couldn't use into the sun. We have slack enough for a little exposure."

Michel was more sorry than angry. "I'll bet you don't know just how many million square kilometers have been interdicted since the Chinese intervened in Vietnam and how much of it reached the sea. Or how many tens of millions of people have died from that and related causes." Savagely, "If I were a woman, I'd have myself sterilized."

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Tedi shrugged, irritated now. "So do it anyway."

"I would," grimly, "if it would make any difference."

The *Times* was in its way both more restrained than *This World* and more dismaying. Half a million Israelis had been evacuated from the Sinai in accord with the Third World talks—at gunpoint, that is. That was no great hardship to them, given the nation's state of industrialization. But it meant an indefinite time before Palestine refugees could be settled there . . . the Arabs had no such intentions, and if they had, Egypt wouldn't have permitted it.

Worst of all was that the mood of the Israelis was grimmer than it had been in a decade. They and their Palestinian allies were perfectly capable of blasting the Islamate back fifty years—even, it was hinted, of destroying the purification and pumping stations that irrigated The Empty Quarter and filled Lake Nasser west of the Nile. It would be suicidal—the Arabs too were armed, though only with minis. So far the Chinese hadn't dared provide them with area weapons.

The rashers of synthetic bacon had lost their savor. Tedi stirred her coffee, distaste puckering her full lips. It seemed only yesterday, it seemed an age ago, she had enjoyed breakfast, a time when she felt fully alive, with all the day before her. With a sudden poignant pang of self-pity, it occurred to her that she was getting old.

New tension among the lunar nations, she read. That was nothing new. Now a Soviet bioengineer—Yevgeny Sorokoff, old Yev whom she hadn't seen in years—had reportedly designed a vacuum-living plant that excreted various gases. *Tass* proposed the terraformation of the Moon. The U.S. had protested against lunar tampering until as much was learned about its primitive state as possible. Europe protested the terraformation at all, wanting to build up a vacuum-based industry.

She'd last seen Yev at the International Biological Symposium—God, had it been three years? So that's what he was up to. A good idea . . . for a moment Tedi's mind was drawn into the problem of genetic design for a vacuum-living plant, then with a start she checked the time.

"Do you have to go?" Michel asked, staring at her tragically as she rose.

Now he woke up. "I have to fly in, and if I don't leave early I'll be late."

He followed her vaguely. "On the commune we always had time for each other. But you always have to rush, rush, rush."

She definitely did not have time to hold his hand, late or not. It was ridiculous—he was almost twice as heavy as she and towered over her hundred and fifty-two centimeters.

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Besides, it would only lead to another argument . . . he wanted to have a baby, illogically enough. Said he didn't feel like sex was accomplishing anything.

"You should have been raised on the commune," Michel said, irritated, guessing her thoughts. "Or just on an old-fashioned farm, someplace where you could appreciate Nature's Way. Or what nature was like before we raped it. You can't look from anywhere to anywhere now without seeing somebody's damn house."

Poor Michel, she thought with a sudden pang. On the commune, sex roles were more clearly defined, and a person's work gave him reason to feel at night that he had accomplished something that day. But here, it was Tedi who supported them—advanced education was not available on the commune, even if it had not been abhorred. It must give him a feeling of emasculation. She checked her hair again, slipped into her jacket, picked up her purse.

"Tedi?"

There was an appeal in his voice she couldn't ignore.

"Have you ever thought . . ." he looked at her anxiously, began again. "Your career . . . I mean, there's no reason you have to work for the Department, is there? Why don't you . . . well, find a job with one of the big corporations—better yet, one of the smaller companies. You could earn more, and surely you could accomplish more. It's not like you'd be giving up your career. And we'd have more time for each other."

That was certainly true. She had considered it herself, well aware that it was the Department's insatiable demands on her time that made most of their troubles.

Tedi went to him, melted. "I'll think about it," she promised, her voice muffled in the hair of his chest. "I'll think it over carefully. We can't go on like this." Then honesty compelled her to answer, "But . . ."

She felt his arms tighten, heard his teeth meet.

The same old problem! How *could* they talk to each other?

The relentless pressure of time separated them. He gave her a long tender kiss and let her go, wordless. She settled herself as the airboat's jets wailed and fell off to a hollow whistle.

Leave the Department! Ah, but would that settle their problems? Was it her career that took her away from him, or her work? Her work she wouldn't give up for any man, and she had told him so. (They had told her she'd never be able to live with such a man; they had told him he could never live with such a woman.) He had been very understanding. God, how they'd understood each other! Neither had imposed on the other, or interfered with the other's life . . . Each *listened* to the other.

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With a poignant stab she yearned for their early days together: tripping out in Yellowstone, sailing to Bermuda, the week they had saved so long for at Spaceland—love in free fall!—how long had it been since they'd really made love? Even the hours they had spent in the garden he had insisted on . . . she had found it fun to try out newly-synthesized plants herself.

Was their essential mistake her acceptance of the job with the Department, or moving into a city apartment? Perhaps Michel would have been happier in an exurb . . . But, no. The exurbs were too crowded, each house on its twenty or forty acres, all the people more or less alike, very little open ground anywhere, and too many people on what there was. The apartment was not that restrictive to a man of his temperament; the walls were within his mind.

Tedi sighed. At first he had been quite apolitical. A quiet man, but not without opinion—arguing used to be fun. He was always there, deftly turning out superb little paintings in any style (all alike to her), composing haunting little

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tunes and songs (but a party where one person after another got up and gave out his composition was incredibly dull and incredibly long), writing gem-like short stories (with the collapse of the publishing industry, books were passed on free, each making a copy of a friend's record; Michel's had never received critical notice), sometimes taking a minor role in an audiovisual (movies too were passed on free; Michel had never been noticed).

Was it the demonstrable usefulness of her life as opposed to his own inability to make a mark at anything that pushed him into radicality? Was it his memories of the halcyon commune that caused him to join the conservative SAVE? Or was it all merely neglect?

All of which did not help her answer the basic problem: how could she choose between the Department and Michel? She'd said she wouldn't give up her work for any man. God knew, there was a desperately urgent job to be done, and she was one of the few both able and willing to do it. The world needed her talents—both in bioengineering and in government.

But this is Michel, Michel!

Washington loomed before her and the robopilot beeped in alarm. Tedi brought the airboat in along the Skyway, peeled off to follow the wide ribbon of the roof of the Slideway to a hangar tower. Down, she winced when she found what the day's parking would cost. But Black Star was blockading the Skyway stations in protest against the city's continuing employment desert.

The Slideway at least was free, and it took her directly to the Federal office building. Late. There wasn't time to check in at the office before the Advisory Council met.

"Hi, Tedi. You look like you've been plucked up by the roots."

It was Learoyd, Presidential Adviser on the Economy, a silvery-maned relic of Kennedy days.

"Hi, Leary. It's how I feel. Swimming seems to agree with you."

"If the Potomac was good to John Adams, it should be good to me."

The Presidential Advisers were too large to be a coherent group. They met by detail. Hamilton, one of the few of them who had any power—he represented National Black Star—called them to order as the late-comers filtered in. The Economy was represented, as was Ecology, Urban Affairs, and Agriculture. Cone represented Black Affairs, theoretically a rival to the radical Hamilton; but they got on well.

"We'll have to make this short, or give Tedi the floor," said Hamilton. "She has to attend the Security Council this morning. Tedi, can rats be totally exterminated?"

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"Almost certainly." Tedi looked around the table.

"Can we have some details?" Lindstrom, Agriculture.

"Basically, it's a matter of tailoring a disease that arouses no immunological reaction in rats. One, say, that gobbles up a given vitamin. Better, one that secretes a hormone—any hormone. But it would have to be rat-specific. Otherwise it might take all rodents with the rats, maybe even affect all mammals."

"Well—if it wipes out mice, who cares?"

"All rodents—not just mice. That includes beavers, which are vitally important all over the north and mideast, to say nothing of the Canadian states. Besides—Mike, fill them in on mice."

Mike, Ecology, cleared her throat. "Extermination of mice would play hell with the ecology. Probably end in the termination of half a dozen other species. Coyotes, even wildcats, and owls all eat mice—lots of them. And Lindy will admit, if you twist his arm, that mice are no problem in agriculture."

Lindstrom admitted it.

"Would extermination of rats have such an effect on the ecology?"

"We don't think so. They're not as important as mice, not as common even on a kilo per kilo basis."

Urban Affairs—an underling Tedi didn't know—said, "Then there are no objections to extermination *per se*?"

Hamilton frowned at the Latin, looked back to Tedi. "You're sure it can be done without affecting any other animal?"

Tedi nodded, said, "We'll have to keep a close watch on it. But we have specific bacteriophage planned; we can halt it any time. Of course, we've never attempted to eliminate a vertebrate, but when we exterminated insects we had no problems—and twice we've had to halt."

"Any objections from any department?"

Mike said, "I'd like a little more detail on the extermination."

Tedi passed her a record card. "We've chosen two weak points, and two bacteria. The effect is synergistic, giving us tighter control. Both are rat-specific; the synergistic effect makes the probability that any other species will be affected vanishingly small."

No department represented had any objections, not even Bio Field Services, Tedi's rival. But someone pointed out that Health wasn't represented. They would be forwarded a circular copy of the recommendations.

"Learoyd," said Hamilton, "you prepare a rider on the economic benefits. Cone, I want your help in drawing up a rider on the benefits on city living; we'll want someone from Urban Affairs, too."

Tedi said, "Will you need me?"

Hamilton said, "No. But prepare a summary of the methods you in-

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tend to use, in words suited to the understanding of Congress. And we'd better have a complete report as a supplement."

"O.K., I'll have them both done by tonight—I hope. I'll send the complete report to Mike for analysis and checking. You and Field Services had better go over it together," she added.

Rush, rush, rush, she thought, feeling tired already. It was mostly worry over Michel. There was barely time to run down to her office and get started before she would have to leave for the Security Council hearing. But what was she to do? She couldn't just throw him out into the cold cruel world to drown.

"Hello, Fiona," she said breathlessly to the strapping black girl who was talking to the computer. "Listen, is Black Star blockading the locals, or will I have to fly downtown?"

The big girl shut off the mike and smiled down at her. "You're O.K., Tedi. Some of the local stations have been blocked, but the computers are routing around them. Those are mostly the ones used by government workers."

Tedi sat down, nodding in relief. "We've got work," she said to the staff. She filled them in briefly on what was wanted, cut short the cheering, and assigned Fiona to do the summary.

"But I don't know a thing about bioengineering."

"Neither do I," said Tedi pixily. The black girl was strong-minded, intelligent—more than capable of running the staff. Tedi would be away most of the day. "You won't have to bone up on it, the boys and girls will fill you in. You write the summary, and the report itself will be written from it. Draw lots or something, people; each take one section and start giving Fiona the goods. You all know what we're doing. A copy goes not only to Ecology, but to Biological Field Services, so be careful."

They went at it with a will, and the computer programmer, Fiona, quickly welded them into a team. This was the Department of Bioengineering's first big project under Tedi's aegis; all were anxious to show what they could do.

Tedi had only a few minutes to get them started, and left with a warm feeling. A great gang! *Here* was her place . . .

The nearest local Skyway station was a dome on a store roof, served by a special elevator. Tedi punched her destination on the board and waited; presently a six-passenger car swung into the dome.

She slid into her seat, ignoring the three other passengers, each in his own transpex cubicle. The car slid forward silently and there came the push of acceleration. It climbed up the rail until it was doing a hundred kilometers at the seventh-floor level. Rock Creek Park flowed by to the right. The

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car swung aside, quite a bit out of her way, to pick up another passenger. Then it zagged and dropped one off, built back up to speed in a flat seven and a half seconds.

It looked hot outside already, though the polarized windshield muted the glare. Presently the domes and glass slabs of downtown climbed up around the rail. The sprawling capital was not adapted to building up into an arcological unit, though much low-cost housing had been. The city was still pleasant to look at.

They stopped finally, not as near her destination as Tedi would have liked. An elevator took her down to Slideway level—the Ways ran through many of the larger buildings. Black Star was out in force, patrolling the Slideways with autoguns and riot-control spray. They had no intention of letting the blockade get out of hand, Tedi thought, relieved. It was just the sort of thing Michel might get involved in.

When she descended the acceleration strips at her destination, she was barely on time. Then came a twenty-minute wait while the members of this segment of the National Security Council straggled in. Tedi didn't recognize any of them but they had all heard of her. Her tiny figure and platinum-blonde hair were a favorite of capital photographers and reporters, though her department was not all that important.

The Chairman fixed her with a severe look, and Tedi braced herself. The National Security Council had a powerful conservative bias. The Chairman was a fat, pursy type who had been in government nearly twice Tedi's life. His prejudices were fossilized relics of the Sixties and Seventies of the last century.

"Now then," he huffed. "To begin, Ms. Sorensen—do you know, of your own knowledge, whether this country has made any plans for biological warfare?"

"No, I don't know of my own knowledge any of the government's war plans—if it has any."

He looked nonplussed, then severe. "Come, you know what we mean. Is any biological warfare research being conducted?"

"Certainly. The universal diagnosticon is a product of biowarfare research. We're also working on phage to exterminate disease organisms; hopefully the time will come when all disease can be eliminated. Perhaps sooner than we think."

After a silence, another member of the panel, equally old but not so arteriosclerotic, spoke with a faint smile of the fatherly sort she was used to. "Wouldn't that have disadvantages? In the event of a bio attack, the population's immunity would be nonexistent."

"True. But we wouldn't be depending on immunity, but on phage. The diagnosticon, you

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know, can check for more than a thousand diseases in thirty seconds on a one-cubic-centimeter blood sample."

"But those must be known diseases."

"In event of plague, natural or artificial, the invading organism would be present in massive quantities. So would its toxins. We can synthesize phage forms, virus or bacterial, to order in less than twenty-four hours on a crash basis—and the average is more like ten."

"Then you are doing biowar research?"

"Certainly."

The fatherly one asked, quickly, "Defensive research, you mean? Are you doing any offensive research?"

Tedi took her time about answering. What he wanted, transparently, was an admission, however qualified—for the publicity. "Depends on what you mean by research. You know, or should, that biosynthesis is no longer a classical science, any more than bridge building is. We feed our requirements into a computer and it tells us what we need to achieve the effect we desire. It isn't necessary to actually test more than about three percent of our conclusions, and to date this has never involved the actual synthesis of an inimical germ. But since we want to be able to defend ourselves against any conceivable kind of bio attack, we must conceive of every possible kind of attack and work out the actual parameters of the organisms it would take, to find their weak points. We have records of several thousand inimicals and their countervails, ready to synthesize."

"Then you admit that the U.S. does have biowarfare diseases ready to synthesize?" the Chairman pounced on her. The other older member closed his eyes in sympathy.

Tedi could already see the headlines, but she took it on the chin. "Of course. As a precautionary measure. We also have, if my memory serves, quite an arsenal both of clean nukes and radioheads—none of which we've used since 1945. That's nearly the record—of the nuclear nations, only Japan has never used nukes. And many have used biowarfare—but not us."

Tedi glanced over the younger members of the panel. They were nodding, unimpressed by the Chairman's theatrics. The whole meeting was a political maneuver, they were only going through the motions to appease him. America's decline to second-rate status, followed by the Soviet Union's, had produced a cooler breed of voter, represented by such men and women as these.

The fatherly one said, "Has any of this ever been tested in practice?" knowing what her answer would be.

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"Not in my time," she said. "At least, that I know of. But just after the diagnosticon was developed it was rushed to Southeast Asia and it and antibiotics helped to wipe out a plague supposedly promoted by Hanoi, centering in Burma and Thailand. It could have been natural but for the pattern of the outbreaks. And a few years later improved techniques were employed on Taiwan, so successfully that it was kept a secret for five years. Parts of it are still secret, but we think virophage synthesis was used there for the first time. The Japanese developed it before we did, you know. Both plagues were attributed to China, but never proven."

One of the younger members supported her, too. "What about bio attacks on agriculture, or the like? Tactical warfare?"

"Frankly, that's one of the department's greatest headaches. There are as many points of attack on livestock as there are on human beings, and nearly as many on a plant. And the number of vital or important plants and animals is large—enormous if you count synthetic bio processors used in sewage and garbage disposal. We've prevented billions of dollars' worth of diseases in agriculture and industry. Good practice for the real thing."

"What real likelihood is there that China might attack us with bio agents?"

"I'd say none, or very little," Tedi admitted. "Progress has been fast in this area, and frankly, knocking down a plague is not particularly difficult. Growth of communications and transportation means we don't crowd together the way we did, home purifiers for roof-trapped rainwater make wide-scale infection difficult, and so on."

"We'd like to have complete reports on the actions of your department, Ms. Sorensen," said the Chairman, frowning at her petulantly. "We'd prefer to make our own evaluation of your activities. My colleagues will see to it."

Tedi nodded but sighed. The portly Chairman gathered together his dignity and stalked out, leaving her feeling very small and tired. More publicity, an explanation to Michel—or would he simply be sympathetically understanding, or, damn him, silently accusative?—a scarehead from SAVE . . .

"Tedi? I mean, Ms. Sorensen?"

She opened her eyes with a start. The rest of the panel was still there.

"We were wondering . . . that is, the possibility was brought up of designing, say, plants that could devour and concentrate radioisotopes in some way . . ."

Galvanized, Tedi sat up and looked at the fatherly type. "We understand that the Soviets have done work on decontamination organisms. Our budget doesn't allow for it, but we have our own computer, and just in our spare time,

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some of us have looked into it. Of course, we haven't worked out gene-prints for the actual designs. Our best idea is a decon oyster that picks up strontium and stores it in its shell. We're still talking about ways of picking up actual radio-isotopes—I mean, carbon-14 instead of carbon-12. One of my best boys is on the track of a hardy grass that will pick up any kind of radio-element and store it in outsized, sterile seed pods."

"I see. Fascinating. And legitimate research, defensive rather than offensive . . . Of course, the Council has no powers, but your department really should have a budget for decontamination research." He smiled ruefully. "We were thinking of the Sinai. Unofficially and just among ourselves."

Tedi smiled faintly. "All bets are off in interdiction—no doubt they'll have molded their pellets of ceramics or glass. Personally, I'm not at all sure it would be wise to get the Israelis mad at us, not the mood they're in—remember what happened to the Washington Monument."

"Perhaps not. Well, Ms. Sorensen, I suppose we should get down to business. The Chairman wants a list of all your current projects, and perhaps we'd better examine your organization chart . . ."

Tedi sighed and dug down into her purse.

When she escaped she was late for her meeting with the Secretary of State. She paused long enough to call the office, dealt with some Department business, turned down several requests for speeches. Last of all, the record of a call from Michel Ferron.

"Put it on." Damn him, she'd told him not to call her at the office. Did she have to revoke his com clearance?

"Hello, Tedi? You said you were going to be at the General Oceanics PR flounder, didn't you? Do you have to be there? I mean, you could cut it without anybody noticing, you could say it was Department business or something . . ."

Coming abruptly out of her rush-dazed, irritated trance with a start, she concentrated on his expression. It was almost normal. There was the faintest sweaty appearance about the hairline and the upper lip. The tone was normal, almost casual, as if what he asked was perfectly natural—but it was just a little over-controlled.

". . . almost any excuse will do. It's not that important, is it? And we'll have more time together this evening . . ."

She heard the record out with stony patience, learning, as she expected, nothing, and started punching numbers the instant the visiplate went blank. She was fuming, but under it her knees were quaking with fear for him. Why *did* the damn dear little fool get mixed up in these things?

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"Security? Theodora Sorensen, Department of Bioengineering. Have you laid on defenses for the General Oceanics and Unlimited Systems press conference this afternoon?"

Lengthy pause while the Security Coordination Center checked its files. "Countermeasures are up to New York Police Department; a number of them will be on duty," said the desk man. "We have a few agents on stand-by, but we aren't looking for trouble. On the seafarm it's up to the Coast Guard. Did you have a tip?"

"Y-yes—but my name will have to be kept out of it."

He looked sympathetic. "It would be anyway—but I can see what you mean, Tedi—I mean, Ms. Sorensen."

Tedi gave him a weak smile. "It's SAVE, I'm afraid. Or at least some of their hangers-on."

He sucked on his lower lip. "That's bad; an organization will flip for a riot every time, for publicity." Then he looked skeptical. "You're sure it's SAVE? Frankly, I'm a supporter myself, and we have no objection to bioengineering, even synthesis."

"But seafarming?"

"Well, I don't go that far myself—but you have a point. I'll alert New York. You'll be there? Want a bodyguard?"

Tedi turned him down but thanked him. Immediately she called the apartment, but he was gone. Probably already in New York. She had to sit down. *Oh Michel! Why?* She could never, never tell him that she had tipped off the Establishment. Toadying, he would call it. She felt sick and very much alone.

Then her small temper rallied her. Damn him, he should have had more intelligence than to get mixed up with a bunch of conservative nongs like that—people were starving and only the seafarms could provide food for them. To hell with the fish!

Migod, the Secretary of State!

She jumped up and dived out the door. As it was opened the soundproof com-booth went transparent, but not soon enough to keep her from bouncing off a big truck-driver type. She put one hand on the mall's rubbery floor, felt a great hand wrapped around her elbow.

"Sorry, kid. You O.K.?"

Tedi flashed him a smile, bounced to her feet a little shakily, and hurried over to the escalator ramp to the Slideways. Seated, she slumped down and closed her eyes. What could she say to Michel? Damn it, they were *trying* to save the world! Did they think they were helping? It was SAVE and groups like it who opposed the only workable birth control system ever proposed—a pair of synthetic diseases, one in the male genital tract and one in the female. Benign diseases, except that they would at-

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tack sperm. The combination would mean that to have a baby, a couple would both have to be cured of the disease, and then exercise caution not to get it again. It should be easy to spread though not an epidemic disease, and readily controlled.

Opposition to the idea was loud and came from every side. SAVE's objection was that it imposed a penalty on underdeveloped nations—an elaborate medical program would be needed to maintain the birth rate, costing from ten to twenty-five percent of the average small nation's annual military expenditures. A heavy burden, a grinding, ruinous burden. Genocide! Whole nations wiped out for lack of medical aid! The ultimate in biowarfare!

"George here, Miss. Anything I can do for you?"

She opened her eyes with a start. A pleasant, youngish, conservatively-dressed black man with the flamingly radical Black Star on his jacket pocket stood before her on the high-speed lane. "George"—in Washington—was the Black Star man you asked for whenever you needed any kind of help. He or Georgia could be found at almost any public establishment, especially pool rooms and bars. In St. Louis he was Louie; in Chicago, Monday; and he was The Man anywhere.

Tedi thanked him, shook her head. Behind him, her street name swept toward her.

Descending the acceleration strips expertly, she found her knees still weak. When she entered St. Clair's she was instantly rushed to a reserved table where, to her relief, she saw a tall man speaking to the headwaiter. He had not yet seated himself. The headwaiter's eyes lit when he saw her, and she smiled back. The tall man turned and bowed, revealing graying hair around a thinning spot. No, a thickening spot; he'd had a hair-restoring treatment.

It was the Undersecretary of State. She squeezed his hand, said, "Hi, Mr. Harris. Decided to take a little of the load off the Chief and earn some of your pay?"

He chuckled, said, "Delighted to meet you, Ms. Sorensen. No, as it happens we've put a heavier load on Mr. Two Eagles. He's flying to Antarctica in my place; the situation is rather grave at the moment. But be seated."

The waiters had vanished. Tedi punched for a moonlight cocktail and with a sigh for an alcoxidant pill. A moment's examination of the menu board and they punched their selections.

"Did the Secretary have time to brief you on what he wanted to know?" Tedi asked. "I understand he was briefed on biowarfare research not long ago."

"That was part of it. The National Security Council is domi-

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nated by conservatives, as I suppose you know, and they seem to be gunning for your department."

"I know. I'm just from a meeting with them. You'll be reading about it tonight."

"That's too bad. The country's not so stable, God knows; there's no room for demagoguery."

She nodded, thinking unhappily of Michel.

"Mr. Two Eagles wanted to know about rat extermination."

Their orders were delivered by hand, deftly, and again they were alone.

"It's up to Congress now," she said. "The Advisers passed it unanimously this morning. The recommendations are still being drawn up."

"Wonderful! Prex himself will push it; everybody hates rats. Another thing—this came up at the last minute—that Russian's vacuum-living plant. What do we have in that line?"

"Nothing. I don't believe any corporation has attempted anything so difficult and doubtful. We in the Department have done a little doodling, just for fun, but it would take a month to calculate designs. Synthesis could be done within five or six weeks, I think. Of course it'd take a year and more to learn if it would be stable. Apparently they've already gone that far." Mr. Harris was silently encouraging. Tedi expanded. "Yev's plants are deliberately inefficient; they reduce rock and extract gases, which they waste to the outside. Our thoughts were of efficient plants, designed to produce edible fruit or tubers, encased in armor. You'd crack them with a chisel when you got them inside, and the shells would be metalliferous."

"Ingenious! Er, I trust it won't hurt to mention this, but we believe that *Tass'* mention of terraformation of the Moon was a bluff. His plants would be ideal for inflating domes. It would speed colonization—not only would their extractors be sun-powered, but grown on the spot, self-repairing, self-reproducing—well, you're the bioengineer; you see the potential."

"Ultimately giving them a stranglehold on the Moon, which they would employ to try to cut us off from the asteroids," mused Tedi. Granted the Moon as a space base, the cost of Soviet space transport would be markedly lower than the West's (China still had no space-power to mention, Number One superpower though it was). They could dump asteroid metals on Earth, causing much trouble in a society that was just digging itself out of a depression caused by sea-farming.

Tedi smiled. "I suppose we could design a lunar animal that would tear down their domes to get at the plants." Mr. Harris laughed. "Here's a better idea," she said thoughtfully. "Plants that will live in the asteroids. Our kind would be

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more valuable there than Yev's."

"That sounds good. You might propose your designs to some of the space corporations. Oh, yes, another thing: I understand it's theoretically quite possible to synthesize men?"

Tedi nodded, glancing sideways. That was a delicate subject for two government employees to be discussing, in public. "Of course, nothing that complex has ever been synthesized—no vertebrates that we know of. The few attempts to synthesize things like lobsters have—not failed, but been disturbing. Practice doesn't follow theory so far. The uncertainty principle, for one thing. But in ten years, or maybe twenty, we could advance the state of the art until it's as exact as it now is with microbes and simple plants."

"Then in twenty years it will be possible to design and synthesize men to order? Men capable even of living in deep space?"

"Only if such a research program is carried out. No one dares; the people are genuinely frightened of androids. Certainly no government department could investigate the subject."

"Yet, there's the possibility. Suppose the Soviets develop them? We can't sit back and watch them occupy all space, or even just the Moon. We're really afraid of a war there, small beside the six on Earth, but expensive."

"Well, we'll have plenty of warning, I think; they won't be able to produce anything in less than ten years, and it takes time to build up a population of men and women."

"That's a relief." Harris chewed and swallowed, said, "But it brings up a related problem Mr. Two Eagles was particularly interested in—the possibility that the Soviets or someone might develop a superman or supergenius android—even a man who could be generated by orthosomatics. Is it very likely?"

Tedi shook her head decisively. "It isn't even possible, not at the present state of the art. What is a genius? What makes him different from a moron? Both have exactly the same brains. The difference is in the mind, the software that prescribes how the brain's hardware is to be used. That is hard to reach via gene manipulation, though not—we think—impossible."

"Hm-m-m. And a superman?"

"Super in what way?"

"I suppose a superman would be like a man, only better in every way," said Harris slowly.

"Well, intelligence is a gamble. But to be stronger, he must be bigger, unless you design muscles unlike any known. Even supermuscles would have to be supplied with lots of fuel and air, via the bloodstream. That means a super-elaborate circulatory system and some remarkable lungs, plus room for same, plus a digestive system capable of supplying large quantities of energy—a liver to store it until

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needed—and so on. One part could be made super, but only at the expense of another—robbing Peter to pay Paul. A man could be designed to breathe water, for instance, but he wouldn't be efficient in air. A convertible lung/gill wouldn't be very efficient in either air *or* water. Do you see?"

"Yes. But how about vision, hearing, the senses?"

"Those are brain functions—the better the brain, the better the senses. Animals see only what interests them, and then only if it moves, usually. They haven't the brain to evaluate so much data. That's why insects can see behind them while men can't. There's not much improvement possible for human beings, though we could adapt a man to special conditions, such as low light-level. As for super, unheard-of mental powers, X-ray vision, and the like—you describe 'em, we'll design 'em. We can't make anything unless we know how."

"Well, that is good news," said Harris, stirring his coffee. "We have problems enough with more innocuous synthetic life forms."

"Yes." Tedi sighed and thought somberly of Michel and SAVE.

"Oh. Just for my own curiosity—hasn't there been some discussion of recreating extinct life forms such as passenger pigeons?"

Tedi nodded and began to collect her things. "Yes. Bio Field Services proposed it and are looking into it, though it'll be up to us to design them, if and when. We'd have to have fur or feathers to get the gene-print from—mummified flesh is better yet. And something is inevitably lost, so there'll be some uncertainty as to whether it's the actual thing—not only indistinguishable from but freely interbreedable with the original. We can never be sure, but we can come pretty close."

"It sounds worthwhile. It might get you some support from conservative outfits like the Sierra Club."

Back on the pedestrian mall, Tedi felt that the only thing she wanted was to lie down and let the world recede. But she plodded resolutely to the com-booths and called the office again. Work was piling up, but not at too oppressive a rate.

Tedi had to try three Skyway stations before she found one not blockaded, and began to be apprehensive that she would be late for her meeting with Black Star. Starting as she did from uptown, she drew a twenty-four-passenger car with a consequently longer manifest. At length it dropped her off in the projects, where arcological city units alternated with older sections, badly run down.

She descended in an elevator in a largish shop, ignored the aisles of goods. On the street—there were no overwalks here—she swung out with

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a brisk stride after a pause to get her bearings. No traffic was allowed in this street—mall, it would be. It was old-fashioned, hot, paved with concrete, even had fireplugs. Some had been converted to not-very-attractive fountains in which played nude black children. The center of the mall was set with drooping willows, dull in the heat. But everything was scrupulously clean.

Her spruce, petite frame and platinum-blonde hair attracted numerous glances. She was nervously glad so few of them were male, then puzzled, then remembered the blockade. A post office sported the deep purple flag with the Black Star. Women nodded to her and some spoke. Children ran after her, shouting that her hair was a wig, or bleached. Tedi smiled but ignored them.

At the first corner she saw her first Black Star warrior on patrol on his own turf, and was disappointed. He was a fat, blowsy sort with an unshaven jaw and receding hairline. His black synthasilk suit was sweatsoaked and he smelled of cheap wine. But he was past fifty, and that must mean he had fought in the street battles. He surprised her by nodding and touching his brow.

"Can I help you, Ma'am?"

Tedi glowed at him. She had never been called "Ma'am" in her life, and found she liked it. She explained briefly.

"Yeah, you're headin' right. Anybody bothered you?"

They hadn't.

"This is a residential district; not many whites find their way down here . . . not that they're really unwelcome, except at night. Up on the drag, now—drop in sometime when you've got the time. We got more fun and better food per square yard than anyplace downtown—"

"Ay!"

A whiskery bandit in a yellow uniform waved at them from over the hedge that blocked off the street from the mall. "Miss Tedi Sorensen?"

A taxi-driver. Tedi had never been called "Miss" before, either; she liked it even better than "Ma'am." "Black Star sent me. You went out the wrong door or you'd've found me. Hop in."

The nuclear-electric car was air-conditioned. Tedi took a deep breath and relaxed. "Must get to you, when you're not used to it," said the driver. There was no armorsheet between them, a comment on the policing the area received. "When we get the 'crete covered with grass it won't be so bad. Some we're gonna roof with sunpower." *We,* not *they.*

The Black Star building, when they reached it, was a featureless cube, rebuilt in purple prefab panels. The only break in the wall was the imposing entrance draped with black flags. The cab driver seemed

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unimpressed by the proximity of Black Star's awesome power, gave her a cheery good-bye and watched her walk in.

Tedi repressed an internal quiver as she strode through the entrance into a small armored room. The facade of the building, and this room, was covered with carefully-preserved bullet-nicks and shell-scars.

The Revolution had not been so much against the government as against the absentee ownership and administration of black ghettos, especially schools, and against organized crime. That was eliminated first, by the simple process of beating up and shooting its pushers, pimps, and numbers runners. Black Star took over the numbers itself, in lieu of taxation.

But the attempt to eliminate crime brought out all who profited by it, beginning with the police. It was these battles that were remembered—at one time no blue-clad man could live more than an hour or so in any ghetto—but it was the unpublicized war on the street agents and the landlords that won the day for Black Star. Now it was a government within a government in every major city and in the nation generally; and this was the home of National Black Star.

The Revolution was pretty well over by the time Tedi was born; she had taken it for granted. Not that she failed to give Black Star due credit; it had largely eliminated poverty as it had been known, along with its concomitant, welfare. And the Cosa Nostra had been seriously crippled. Thus, when Black Star asked for a meeting, she had treated it like any request from a nationwide organization, though this was more powerful than most.

But now, as she entered a larger reception room full of Black Star warriors—the cold goods, chiseled ice statues with an eagle alertness—it began to come home to her. One of them nodded to her and led her through the massive fortress to a huge hall, dimly-lit, done in purples, violets, and sky-blues, with the Black Star behind the podium—a four-pointed black star in the shape of an X in a circle.

It was the National Black Star Congress Hall.

She was left alone for a nervous time, then her guide returned with a wide smile and showed her into a roomy conference room just behind the podium. The National Black Star Chamber met here—supreme ruling group of ten percent of the country's population.

Fiona greeted her.

The idea that the big black girl could be high up in Black Star was startling at first—then obvious. She had a strong personality, strong as Tedi's and more used to responsibility, yet was trained only as a programmer.

Tedi recognized the faces of most of the group, though only one or two names were familiar; she

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did not follow black news much. She was relieved to see that most were young, though not so young as she. Smiling brightly at them all, she seated herself along the straight side of the half-circular table.

"We might as well come right to the point, Miss Sorensen. Fiona tells us you're all right, and she also says you can be trusted. To start with—Fiona says your biowar research is defensive. Right?" A young woman with a cool voice.

"Yes." Tedi nodded, but quickly added, "But we have to design and analyze dangerous diseases in order to know how to defeat them. We have several thousand deadly plague designs in our memory crystals right now."

The Star Chamber relaxed and Fiona gave her a broad smile. Tedi had only been thinking of the Security Council's publicity, due to break any hour. She swallowed and felt her knees unhinge, beneath the table. But she had passed the test for honesty . . .

"Do you want a copy of the report we're preparing for the National Security Council?" she asked. "I can send it to you under the flower."

"No, we don't give a damn about biowarfare as long as someone else is taking care of it," said the oldest man present, T. Ervin Sloane. "Our major concerns are internal."

The woman with the cool voice nodded. "To get right into it, there's a rumor going around that you—or someone—has developed a pill that can turn a black into a white. We hear that there are plans for spiking foods with it. We have a report that it's been tested on interracial marriages. Anything to it? You have anything to do with it?"

"More important," said another, leaning toward her, "could you make a pill that'd reverse the process?"

Tedi had been gasping. She shook her head and then, to her dismay, found herself laughing uproariously. When she finally choked off her tinkling laughter into little-girl giggles, she saw them all looking at her alertly, expressionlessly, coldly. Even Fiona was angry.

But it had been too much; the awesome Black Star Chamber solemnly discussing pseudoscientific fantasy.

"It is flatly and totally impossible," she said formally, biting back a traitorous smile that kept crinkling her lips. "My guess is you've intercepted the broadcast daydreams of the last of the crumbling soggy crackers."

The cool-voiced woman smiled and they all relaxed. One of the men—Ahmed, she realized—said, "You're sure? It couldn't be something like orthosomatics?"

Tedi shook her head decisively. Orthosomatics, designed to eliminate inherited diseases, was based on the fact that humans are generally similar but have individual

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characteristics. Normal humans have one nose, ten toes, blood that clots, adequate insulin, and so on, regardless of race or family strain. But the shape of nose, skull, et cetera, is an individual characteristic. The injection was DNA in the gene-print of the general human pattern, with no identifying characteristics; where the individual gene was lacking, it would supply the defect. Any attempt to alter an already-present gene would have no effect.

And, of course, the injections worked only during conception.

Sloane nodded as she explained; they all seemed to be familiar with the facts. They'd wanted confirmation, though. "Very good," he said. "But how about pills to break down the complexion?"

"Numerous complexion and hair-color-altering pills are known. They have certain limits, though," Tedi said, relaxing and stretching her legs. "Usually they have to be taken continuously, and not many systems can tolerate that. There are also pills that will straighten or curl hair. With them and surgery a man could be made into a crude copy of a member of the other race, at least temporarily, but it would be expensive. And any children would be unaffected, though some of the pills would affect them temporarily too—and some, in fact most, cause birth defects. You understand?"

"Yes," said the cool-voiced woman in satisfaction. "Then you'd say it's impossible for blacks to be turned into whites."

She did, clearly and firmly. "But," she added, her honesty coming to the fore again, "that's not to say that something couldn't be devised, say a powerful form of orthosomatic conditioning. You'll have to keep up with the bioengineering profession. Have some black engineers keep you informed of any progress that might lead to such a discovery. Even that would work only on the next generation, of course."

"Our principal concern is that it isn't done without the victim's knowledge, though we dislike the thought of anyone running out on us," said Sloane, and the others nodded grimly.

"Fiona tells us that the Advisers passed recommendations on rat-extermination," said the cool-voiced woman. "I think that's all we need then, Miss Sorensen," and Tedi stood up if anything a little reluctantly. They thanked her formally and she indicated her willingness to serve them at any time.

Fiona accompanied her. The whiskery bandit in the cab smiled up at them and Tedi slid inside with a surge of admiration for the miracle Black Star had wrought. This old coot was as exuberant about tomorrow as a five-year-old. Pity Michel couldn't be turned into a black. She sighed again at thought of him as the dull pain in her chest returned.

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"I don't suppose it would be wise to let the boys and girls in the office know you were called down by the Chamber to testify about me and the Department," she said to Fiona, to cover the pain. "They might get a little tense in your presence if they knew you were so high up in Black Star. You'd miss the banter."

"That's right. I was never near here, though I was on Black Star business. No one will question me about that."

At the station the cab driver waved and shouted, "Take care of the little lady!" and Tedi smiled and waved back. She had been called a lady before, though not often. She liked it better than she ever had before.

Fiona did take care of her. First she produced a black card and showed it to the Skyway robot monitor. It accepted it and their Unident cards and routed them direct to the transcontinental station. When the little car swung in on its rail, it was promptly surrounded by blacks, many in Black Star uniforms.

When Tedi climbed out someone called, "Hey, what's that white doin'—" taking several angry steps forward. A rumble arose from the crowd. But Fiona showed the black card to the captain, and several of the warriors had recognized Tedi; they were expecting her.

Two of the protesters were sprayed in the face while the captain bellowed, "Black card! Black card, damn it!" They backed off rubbing their faces, began to pant heavily, and hurriedly sat down. A lieutenant cradling an autogun escorted them from the blockaded local and city-suburban levels to the interurban and transcontinental levels.

Tedi stepped into the car for New York with a sigh of relief, waved a farewell to Fiona and the lieutenant, and waited nervously for the train to start. At length it did. Tedi stared unseeingly out at the gleaming white plastic Replica Washington Monument. The railcar train built up speed, flowed smoothly out of the city, assaulted a slope, topped out at six hundred feet, and began to accelerate in earnest, sixteen kilometers per hour per second, not easing off until it was near the speed of sound.

A flight of butterflies went through Tedi's stomach, followed by severe twinges of fright. *Michel, oh Michel!* She was on her way to the press conference, and presumably Michel and his friends were even now laying plans that might get them arrested, perhaps *beaten*—

She'd be smiling and speaking for the icons—down there, Michel would be shouting obscenities and waving signs denouncing all who sided with the despoilers of the ocean . . . including her . . .

If anything happened to him, to any of them, public opinion would blame her and all who smiled for

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the icons. Michel's friends would denounce her to him, would urge him to leave her. Michel would have to defend her actions, her words, to them—the Security Council publicity flap returned suddenly, made her wince.

In the end, nothing she could say would matter. They knew who she worked for—and they had rejected all reasoned arguments. She could quit the government, could even join SAVE, speak out at public meetings, join demonstrations, make speeches, forfeit her reputation for the cause—damn it, didn't they understand the concept of professionalism? A pro doesn't trade on her rep, but on her ability to deliver.

She could do all that and it wouldn't matter. Michel and SAVE didn't know what the world's problems were.

Besides—she didn't want to save the world. She just wanted to save Michel.

Damn it, he had no business getting involved in such things. He wasn't cut out to understand technological society. He was a primitive, moving to the ebb and flow of the tides, the seasons, sunrise and sunset . . . in the heart of the most sophisticated society ever known.

And she?

No, she thought, *I can't quit and join him in his way of life.* She was not that kind of primitive. Besides, the world needed her; it had many problems she would have to help solve before she could join him in his restful way of life—if she ever could.

But leave him? With a pang she thought again of their early days together, of the little songs and poems he used to compose for her.

Deceleration caught her and with a start she realized she had not even seen Baltimore and Philadelphia. They were coming into New York now. Butterflies went through her stomach again, leaving her knees weak. Worse than stage fright, which she'd never had.

From station to station, the trip from Washington had taken thirty minutes. A too-short journey on the intraurban rails brought her to the Universal Biosystems building. *Thank God, thank God,* there were no demonstrators in sight; she had feared to confront Michel . . . Tedi paused one last moment to steady herself before ringing.

The office suite was designed to overwhelm the unwary visitor; the rugs were biomorphic grass (no doubt they turned on the ultraviolet after hours), the hangings on the walls were synthetic or biomorphic mosses, and so on. The occupants also seemed to be products of bioengineering, fully in keeping with the background: brightly-gleaming insecty men with hard glittery carapaces and loud voices, and soft, moist, gray creatures who hugged the shadows, voiceless but powerful and sometimes, poisonous.

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Tedi shook hands all around, murmuring polite responses and ignoring the ogling eyes. In the next room, she found to her relief a number of lowly bioengineers. She knew some of them and all had heard of her. She had been invited for the publicity—her name was well-known, primarily because of her form—but she had developed the phytoplankton the flap was about to introduce to the unsuspecting public, in her pre-Department days.

Well, publicity for the Department was also part of her job.

An explosion of men and loud voices caused her to cringe—but it was only the press.

"Hi, Tedi!"

"Smile for the icons, Tedi."

"Sit down over here and stretch out—let's have a view of the legs."

"O.K., now let's have a view of you shaking hands with Dr. Whozis over here—the one that developed this bug."

"I want one of her being thanked by the Chairman of the Board of General Oceanics."

Tedi went through her paces with a rather glassy smile, relieved only when Dr. Wells winked at her.

"How about it, Tedi? Is this a revolutionary breakthrough?"

"All breakthroughs are revolutionary." These were sci reporters; some she had seen before, though no names came to mind. Their sudden eruption was rather like a plunge into cold water; when the shock was over she found herself in her own element and swimming strongly, fears for Michel and fears of SAVE forced to the back of her mind.

She gave a short, concise account of the new phytoplankton, what it could and could not do—it was a high protein producer and also produced enzymes that gave it the flavor of beef. Other varieties could be devised by biomorphic mutation—controlled mutation, much simpler than actual synthesis—that would have any meat flavor desired. It would cut the cost of synthetic meat by such and such a percentage—the actual figures had to be supplied by Dr. Wells. Her contribution had been to take advantage of a loophole in the nitrogen-fixing sequence to increase protein production.

Universal Biosystems' PR men took it from there, building on this small core of fact a castle of fantasy they hoped the reporters would also carry, a lot of fluff about how the banner of progress in Universal Biosystems' hands was carried forward to a happier and cheaper future for all, et cetera.

The reporters took desultory notes. Then the tour of the seafarm where General Oceanics was putting Universal Biosystems' new phytoplankton into production and to see what wonderful new techniques General Oceanics had devised, et cetera, was announced. About half the reporters accom-

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panied the corporation officers to the elevators.

On the roof were a group of palatial airboats—busses converted to flying offices, boomerang-shaped flying wings. Tedi looked around anxiously, her fears returning. On several nearby roofs were small knots of demonstrators waving signs; their voices carried faintly. The executives ignored them.

So few, she thought, scanning them for an impossible glimpse of Michel.

Tedi's stomach had disappeared; the backs of her hands prickled in panic. She nearly backed out of the excursion, and the sight of a lazily-circling NYPD patrol boat did not reassure her. But then they were all surging aboard the airboats, sweeping her along with them.

The seafarm was an expanse of kilometer-square tanks sixty feet deep, like giant plastic wading pools floating in the sea, full of water which was full of plankton. Sun-powered pumps constantly brought up mineral-rich water from the untouched depths. Ships swam up to and away from the automated loading docks; the domes of processing plants gleamed dully, sunpower panels drinking most of the light.

"What the hell?" Dr. Wells, beside her, leaned forward to peer out. Tedi looked, heart pounding painfully. Airboats circled the seafarm, private boats in bright colors, small, more nearly rectangular than the big busses. Their tail fins flashed in various bright colors against the dull background of the farm, flashed and flickered as they caught the harsh light, circling.

They landed on the floating stage. White Coast Guard Airboats circled, trying to hold the intruders back, but they scattered and began to land here, there, and everywhere on the farm's horizontal surfaces. Only the landing stage was kept clear of them.

Consternation was visible on high financial faces. No one had expected a demonstration way out *here.* Sensible people arranged these things in advance, lest they get out of hand.

"They said they'd only be on the roofs and around the building!" shouted a General Oceanics officer indignantly.

"Wait a minute—that isn't SAVE!"

One banner read, "Kick the Snakes Out of the Garden." Another said, "In God's Image."

"Orthohumans," said Tedi. A monstrous, icy calm had come over her. These were those who objected on religious grounds to biosynthesis in general and any future synthesis of androids in particular. "SAVE has sent for reinforcements," she said bitterly. *But did they have to choose the most senseless radicals in the world?*

Orthohumans were a collection of groups, each an odd lot of splinter parties. They scrambled around

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domes in little bunches led by one or two figures, along floatwalks, teetered along the floats that supported the edges of the nearby tanks. They shouted and gesticulated and waved their banners too wildly for them to be read. SAVE tried to keep them in hand, but the scattered landing had disrupted its organization. Someone produced a hailer and shouted, "Save our seas! End oil spills now!" It sounded weak over the ominous rumble of the orthohumans.

"Does this farm produce oil?" someone asked nervously.

The office float wasn't easily accessible from where most of the demonstrators had landed; they were cut off by the geography of the farm. Frustrated, they stood a hundred yards off across an open channel of seawater and screamed threats. The corporation officials began to relax, though not the reporters.

"Maybe we'd better leave," said one of the latter.

"Nonsense," said one of the PR men, seeing the follow-up story disappearing. "They'll soon get tired and go home. We'll wait them out, here in the employee lounge. There's a bar."

Frustration increased as their audience began to drift away. The orthohumans turned their attention to the seafarm around them. "Tear the place down! Wreck the whole damn farm! Smash those sunpower panels!" SAVE bleated and wrung its hands; only one or two attempted more than words. Tedi saw one SAVE supporter in a yellow shirt go down under furious fists.

She stood appalled. The demonstrators were oblivious to possible harm to themselves. They were so few and by its nature the seafarm had to be so huge that the amount of damage they could do to it was negligible; but it could easily kill them all. That wasn't seawater in most of the tanks—not after some modern plankton got through with it. And all kinds of dangerous chemicals were stored in the floating, half-submerged bottles, some of them pressure bottles.

The General Oceanics officials saw it differently; the Chairman of the Board purpled and ran for the airboat com to call the Coast Guard.

Tedi stood on the float, the sun beating down at her and glancing at her from the water and the bright surfaces all around her. She squinted against the glare, head pounding. The heat, so oppressive when first she stepped out of the airboat, was no longer noticeable. Splashes became audible, hoarse screams of rage and of terror; she saw sunpower panels crack reluctantly under fists and feet, wires torn loose, dangling; valves opened, fluids spurting. Each running figure at first was Michel; each figure that shouted hoarsely or shook its fist at her was Michel;

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each figure that fell or was knocked off into the tanks was Michel. Every figure that screamed was Michel.

She watched him die, and then watched him die again.

SAVE had killed him, with its reasonable but wrong premises, its shifty logic, its demands for the impossible, its appeal to his finer instincts—with its appeal to his emotions and denial of his reason.

She had killed him, with her insistence on reason and logic, her demand for the possible—with her appeal to his reason and denial of his emotions.

Tedi was trembling with hatred of SAVE and of self when her arm was taken. "Come on, Tedi, hurry!" She stumbled blindly to the airboat. The flight back passed in a daze. She heard vaguely that the Coast Guard was picking them up as fast as it could. They were undermanned even after requisitioning all the company men nearby. There were hints of violence, vague, indefinite, ugly . . .

When the airboat wings settled down on the Universal Biosystems building, Tedi felt a pulse of savage hatred go through her at the sight of the demonstrators on adjacent roofs. SAVE! Damn it and all its members!

It had killed Michel.

The press was waiting for them—an alliance between the conservative SAVE and the radically violent orthohuman groups was *news.*

"Did you recognize. . . ?"

"How many were there? Any hurt?"

"How many arrested? What damage. . . ."

"You, sir, what do you know about this . . ?"

"Have you anything to add? Any comment?"

A reporter had approached Tedi, extending an icon. She stood in the raw heat of the city, with waves of air from the passing airboats washing around her, air carrying the odor of ozone and nitrates from electrojets. The glare here was nearly as bad as on the seafarm, and her head already ached, her eyes throbbed. Inside, she was dead, except for the hatred.

"Yes, I have something to say." She felt her lip curl back from her teeth. "I've got a *lot* to say." Her eyes were burning as well as throbbing. "This is the sort of thing we expect from those who think with their bellies instead of with their brains. Nobody should be the least surprised. It would be just like SAVE to call for help from the most fanatic and violent group in the world! Up with manpower, down with reason! Save our fish—let the fish-eaters starve! That's how they solve the population problem: famine suits them fine—*they* don't intend to starve! And that's the only answer they have! Sure, they talk a lot of flunt about

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birth-control, and a lot more flunt about the inalienable right to have children. But there's only one real solution: sterilant bacteria!"

Reporters were gaping, but faithfully recording her tirade. Others threaded their way through the crowd toward her, their icons gleaming.

"The world can no longer afford half-solutions to real problems," Tedi said, hurrying now as she felt her voice beginning to go. "Nor can we wait for voluntary methods. Any *truly* concerned group, if it had brains, could see that. But, no! Sterilant bacteria spells genocide to them and they're more afraid of *that*—that there'll be no more people like them—than they are of war or famine. That's where the nutcracker pinches! Anything but the loss of their vitality! Naturally SAVE resorts to violence, arouses and encourages the most vicious and violent rabble in the world, a rabble that wants no part of civilization! SAVE would drown the world to save it! They . . ."

Tears overflowed her eyes but she continued as long as she had voice. When she choked into silence there was a hush around her. She fought down sobs for a moment, felt pressure on her arm, then there was cool dimness around her and most of the pressure in her head and eyes was gone.

"Uh . . . Ms. Sorensen . . . I, uh, are you sure you want your words broadcast? Perhaps, if you were to tell them you were overwrought . . ."

Tedi's eyes focused dimly on a soft gray shape, trembling with fear of *bad publicity.* An arc of fury went through her, leaving bitterness. "I said exactly what I meant, and I mean exactly what I said!" she snapped, pushing past. She groped her way blindly into the elevator and was irritated when it waited until a crowd of men and women also got in; she wanted only to be alone. They stared silently.

She stayed stubbornly in the car when most of the rest of them got out, but her name was called. "Ms. Sorensen? A call for you. Will you take it here or down in the lobby?"

"Lobby," she managed to say, thickly, and again the elevator descended. A flash of wild hope went through her, died, but left a trace of life behind it.

One of the com-booths in the lobby had a glowing light; chimes came from it. Tedi ran, heart throbbing. Her hands trembled as she fumbled open the door and punched *accept.* "Tedi Sorenson here," she said breathlessly.

It wasn't Michel. For a moment the disappointment was so sharp she saw nothing, then when she saw again she did not recognize him.

"Ms. Sorensen? Security Coordination Center. I knew you'd be at the Universal Biosystems building,

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so I thought I'd call . . . You're all right?"

"Oh, y-yes. How about Michel?"

"Michel? Michel who?"

She stared at him, unable to understand how he could have forgotten a thing so important. "Michel Ferron! The man I told you about—the one who warned me not to go!" she said impatiently. "My husband!"

"Oh . . ." He looked at her compassionately. "I didn't know." He glanced away. "The reports are still coming in, but we do have a preliminary list of injured and arrested; none dead, yet."

"Oh, thank God!" Tedi's tears flowed freely.

"No Ferron on the list of wounded . . . Ah, here he is: he's with a group of demonstrators picked up by the Coast Guard and the Navy and flown to their detention center at Portland, Maine." He thought a moment, looked back at her. "This is National Security business, not Navy or Coast Guard. It carries the usual coding—my guess is that they'll be transferred to the Keene, New Hampshire detention center immediately. Nothing serious will be done to them, I should say—a year's probation. It'll be a day or two before their status is determined, though."

"Then I should go to Keene? Would they let me see him?"

"Yes. As for letting you see him . . . I think they would. Being who you are. It's worth the chance."

"Oh, thank you, thank you!" Tedi sat down and closed the booth's door and cried for five minutes. Then she tried to repair the damage, her mind beginning to function again. National Security would protect them; if they were tried in New York City it would be bad. The city was quite radical about people who'd destroy jobs, especially jobs that produced food, due to the presence of one of the strongest Black Star organizations in the world.

And she should be able to get him out even sooner.

Should she?

He'd hate her for it, she realized with a sudden poignant sorrow. Facing the future, facing Michel mentally, she knew that he was gone, forever gone. She had lost him. He had changed . . . and she had changed. Her memories of the morning with Michel were deep under many feet of water. It wasn't anger or any other emotion that told her their days were done; it was knowledge.

That brought the strongest tide of sorrow she had ever felt, too deep for tears. She sat and felt it rise up over her, higher and higher, until it seemed her heart would burst from the pressure; a tiny whimper was forced out of her. Then it began to recede, and at length it had fallen until she could take a breath. Then a few tears fell.

Heavily, she stood up, fumbled

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open the booth, walked slowly and painfully toward the door.

The Skyway did not run to Keene. She left it in Troy, New York and rented an airboat, numbly astonished that her mind continued to function even to this extent. And still the day wasn't over. Events had swept her inexorably forward, to New York, on to the seafarm, back to the icons, and still the day was not done, it swept her on, to the meeting, the meeting with Michel . . .

The verdant landscape flowed by below, late-afternoon shadows lying across it. Spring was not complete here in New England; the green below was as tender and evocative as one of Michel's poems.

Fall would be a more appropriate time for this trip . . .

Below her was peace . . . Tedi sighed. Abruptly, it was too much to bear. The sight of a timeless village in an achingly lovely valley triggered her decision. Her thoughts were not too clear as she circled the village, searched in vain for a landing field, and finally brought the boat down in a dusty street. She looked out at three-century-old buildings and thought, shocked, *What am I doing here?*

Beside the ancient houses were airboats, a few cars and trucks. She was down in the shade of a massive, ancient oak beside a stone wall, the stones almost invisible under a riot of flowering vines.

Enjoy it while you're here, anyway, she decided, opening the door to breathe the mingled odors of shade and flowers and earth and new-cut grass. A hard-wound spring inside her quivered and began to lose its tension.

"Hello, my dear. Are you lost? Who are you looking for?"

A tiny woman, hardly taller than Tedi though plumply rounded, stood at the gate in the wall. She was the classic, beaming, wrinkled-apple grandma, complete with apron. Tedi couldn't help staring, but she answered politely that she was just feeling a little airsick, and the valley looked so peaceful . . .

The little woman beamed more broadly. "I know how it is; the motion brings it on. I remember the first time I rode in an airboat; I was expecting my third at the time and I wouldn't set foot in one for three years after. Why don't you come in and have a drink of cold water, dear?"

"Thank you. I would like a drink." She looked at the yard, wistfully. "But I'd like to look over the yard even more."

"Be my guest! It's my pride and joy. I have little else to do nowadays, so I put a lot of effort into it. I dearly love a pleasant yard."

Pleasant was the only word for it. Actually there were too many flowers and the yard was cramped, with numerous bushes and flower beds and the overhanging trees that made a cave of shade. But though

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no landscape gardener would have given it more than a passing grade, it was quite the most peaceful spot she had ever seen.

The water was out of a well with an iron pump that must have been a century old. It squeaked. The house was white clapboard, its gable roof plated with sunpower panels, air-conditioned, a nuclear-electric car parked beside it. The water had a freshness she relished.

The woman left to work up her bread. Tedi wandered over the yard, inhaling coolness and peace. Dignity, freedom, self-respect, all were practiced here. Ironic that so much of the progress of the last two centuries was directed toward recovering this. It had been here all the time.

This was what SAVE and Michel were fighting for—they were not merely fleeing the future.

Had she been wrong all this time? Had all their endless progress brought them happiness? Was it really progress? Was it fair to rout out so many people like this woman, as so many had been routed out, in the name of progress? Michel himself had been routed out so . . .

Oh Michel! For the first time she began to realize what he had missed all his adult life. No wonder he was so unhappy. But it was still here! Or wherever they chose to make it. Was it too late? She started toward the boat, determined to go to him and tell him . . .

And stopped, staring. Before her stood a bush with bright blue leaves and stems, drooping under the weight of big, deep-green blooms having the convoluted beauty of roses. The shades of blue on the leaves faded into each other as delicately as the green of normal plants, but the overall tinge was a deep, joyous sky blue.

It was a common biomorphic mutant, but Tedi stared at it. To find one *here,* of all places!

Then movement on one sky-blue leaf caught her eye. A crab-shaped spider crouched in wait, the color of the leaf. It was the kind that normally lay in wait in flowers of its own color.

The very insects were making the adaptation Michel had not made. ■

the analytical laboratory MAY 1973

PLACE	TITLE	AUTHOR	POINTS
1.	Sword and Scepter (Pt. 1)	*Jerry Pournelle*	2.38
2.	With Morning Comes Mistfall	*George R. R. Martin*	2.93
3.	Survivability	*William Tuning*	3.17
4.	Naked to the Invisible Eye	*George Alec Effinger*	4.11
5.	An Agent in Place	*Laurence M. Janifer*	4.33
6.	How I Lost the Second World War and Helped Turn Back the German Invasion	*Gene Wolfe*	4.44
7.	The Great American Economy	*L. E. Modesitt, Jr.*	5.75

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I pretty well remember how the Goat was conceived. We were heading in toward Detroit on I-96, John driving while I tried to find room for my legs. I had pushed the seat as far back as possible but my knees were still getting cramps, bent up the way they were, and I was looking for some better way to fold them when John jammed his elbow through my side.

"Jeez, Mike," he said. "Look at that, why don't you!"

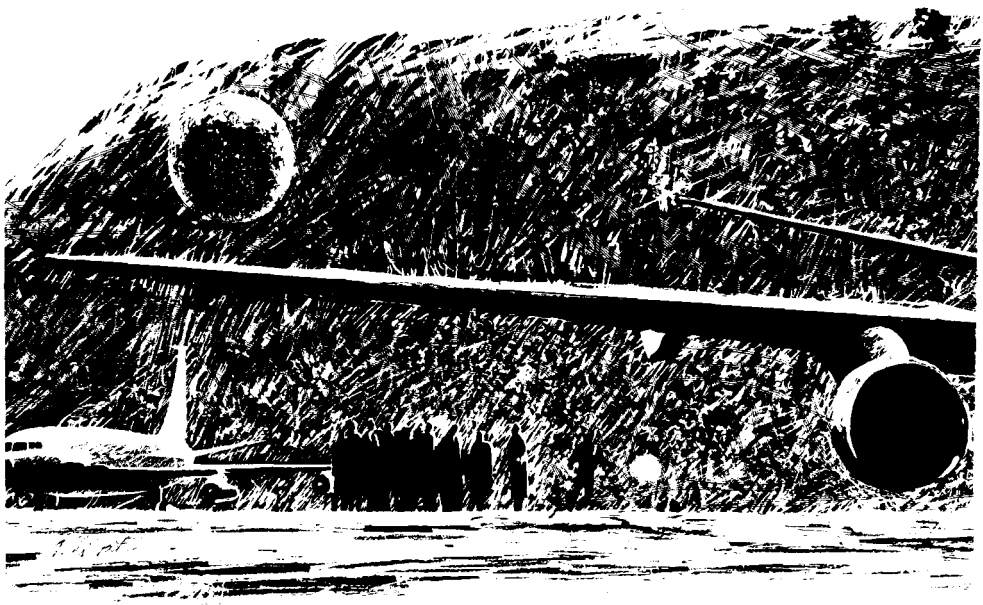
"Because I'm busy," I returned heatedly, but I looked anyway. I had known him since MIT days, which wasn't as long as it sounds, and was still willing to oblige a simple request.

"Over there," he said as I squirmed erect.

"Other side," he added peevishly.

David Lewis / *the epoxy goat*

The trouble with being single-minded is that we live in an infinitely variable world.



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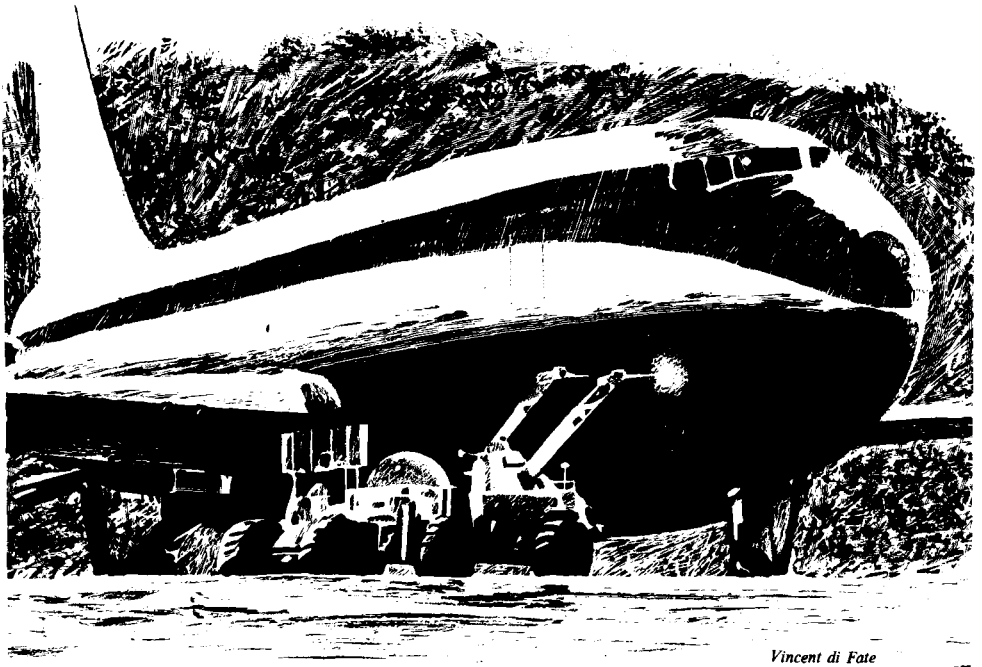
I looked out the other side. Nothing. The usual cars heading west beyond the median. Yellowing, dehydrated pasture land. A covey of road workers picking up trash and dumping it in blue plastic sacks. Nothing.

"The fools," muttered John. "There ought to be something."

"How about watching the road?" I suggested.

"I was," he snapped in self-righteous fury. "Some people never understand! It is possible, you know, to do two things at once! Or it is for me; I don't know about you."

I could have said something, but it wouldn't have gotten us anywhere. Instead, I asked what he wanted me to see. He answered my question with a long, incredulous stare and shook his head.



Vincent di Fate

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"The workers, Mike," he said. "The guys collecting trash. Jeez!"

"Sure," I retorted, annoyed. "The guys collecting trash. Like all the other guys collecting trash that we've seen all day without mentioning. Of course. I should have known."

"Yes," he agreed with amiable superiority, "you should have. But there ought to be a better way to do it. Shut up and let me think."

With an inviting gesture in my direction, his hands left the wheel, the surrounding cars responded accordingly, and I found myself crawling frantically across his short but bony legs, trying to regain control. And in retrospect, maybe that's where I went wrong. In light of all that happened later, perhaps we should have crashed.

Patience is a tender medium; like with water colors, it's hard to keep the colors from smudging. Sometimes patience is surrender. Sometimes it's an excuse for tyranny. Sometimes it can make you feel good all over, like a flower blooming in an early spring thaw, and sometimes you can hate yourself for showing a single petal, like that same flower when the cold snap returns. The Lord knows why I put up with John, and maybe He doesn't know either. I was patience personified, but the wherefore is hard to say.

John—John Gordon Drey, as he would have preferred—was one of those rare, impossible people, a raw bundle of talent. No corner of that brain was wasted on tact, patience, or human understanding, but tact or no tact he could conceive, design, and create 'most anything under the sun, at any cost, monetary or human. Other humans, that is. I had met him at MIT, had been his best friend, had lost my best girl to him, had been best man at the wedding, and best clean-up crew after the divorce. That last means that when John Gordon Drey appeared on my doorstep one blustery, autumnal day, I opened my door and let him in. And now, a full year later, he was still in, using my car, using my bank account, and at the same time using up an incredible amount of my inexhaustible supply of patience, that may be merely spinelessness and intimidation or may be honest to God brotherly love, woefully misplaced.

We arrived in Detroit, and there I tracked down a job while John remained in the apartment or its immediate environs, running up grocery bills and collecting lunatic mounds of old transistors, relays and what-have-yous from nearby salvage yards and, I suppose, thinking about his idea, his capitalized Idea. The smog obscured the sun; the jets thundered out of Detroit Metropolitan, sprinkling soot across our crowded block, and drag-end housewives eyed us from camouflage nettings of curlers and hair

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pins and clucked their tongues in disgust. These are patterns calculated for despair, and I assure you that I felt it. John remained intensely oblivious of anything but himself, and that made it all the worse.

Angela Batterly is a sweet girl. Not pretty, but sweet. She has that peculiar kind of temperament that can see as much beauty in a thrice-painted junkshop table as in a Sheraton breakfront china cabinet, which may explain why she and John hit it off so well in the beginning, what with his scatterbrained piles of transistors and all. But while sweet, slightly gawky, and not particularly attractive to anyone other than me, Angela does have that flexibility of nature that allows one to be a tyrant if the situation demands it, and it was this trait that had sent John Gordon Drey back to his best man's house, a year after the gloves and top hats had been put away. I was a fool to open my door, I concede it, but I imagine it was as much a blow at Angela as it was a gesture for John, since she had, after all, rather effectively jilted me, and it was about time for us gentlemen to take a stand against female tyranny. I had always maintained that her capacity for toleration could profitably be increased. Then I experienced John for myself and began to understand. And then I also began to realize that John being in my house meant that there was only one person in hers, and I began the gradual process of reconciliation, so that by the time John and I were established in a hundred-resident demi-tenement beneath the flight path to Detroit Metropolitan Airport, Angela and I were back on speaking terms. Not, I must confess, that I expected to be speaking as soon as I did, the event being:

My birthday, God bless it, twenty-eight years down old Father Time and not a single accomplishment to show for the last five or six of them. The location being:

Big Mac's Hamburgers/Fishburgers, the street lamps burning arc-light blue, the cars soft-shoeing it down the divided highway, high-schoolers pushing and jostling or leering and wheezing or smiling with a certain softness you never quite find in another girl once you've lost the first one, and Big Mac himself, Vietnam vet from the destroyer *Shannon,* tattoos bulging on bicep waves and a freckle-faced youth and a pale blond girl taking orders and rendezvousing behind the double broiler whenever they're not badly needed and me, all twenty-eight worldly-wise years revealed by the doodles on my napkin and the Big Mac hamburger infiltrating my interior with a telltale smear of relish on scraggly chin hairs. And a sudden female form sliding in across the table who happens to be: Angela.

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I looked at her with appropriate astonishment.

"It's Matahari," I said. "Cheezit, the cops," and satisfied that her face was as disoriented as mine, continued, "How'd you find me?" and she

"I asked John, of course" and I

"Of course? I thought you weren't on speaking terms" and she

"No, he's the one who isn't on speaking terms, but he didn't know it was me. I phoned, silly" and I said

"Aaah."

And she said, "I disguised my voice."

And I said "Aaah" again, and then we looked at one another.

"How's the world been treating you?" I asked.

"The same," she answered. "And you?"

And if I indulged in self-pity and hyperbole, what can I say other than that it was my birthday and that for five or six of the past twenty-eight years I appeared to have accomplished nothing. She listened dutifully until I ran down, and smiled beatifically.

"Why don't you kick him out?" she said.

"Huh?" I said.

"I mean John," she said. "Why don't you kick him out? He seems to be behind a lot of it."

"Well, maybe he is," I conceded.

"Then it's settled," she said brightly. "You kick him out."

"You mean it's settled for you," I pointed out with the wit and wisdom of my age, "but that doesn't mean it's settled for me. I'm not in the habit of kicking out best friends, or husbands, or prospective husbands, for that matter."

"I know," she responded, the smile a little strained. "You're going to tell me my capacity for toleration could profitably be increased. You always used to tell me that."

Maybe my smile was a bit strained, too.

"But I tell you, Mike," she continued, "your capacity for intolerance might be increased as well."

"If you were not my thwarted heart's desire," I observed, "I would be deeply hurt. However since I expect such cruelty I am not at all surprised. No, I might say, not at all. Verily, how sharper than a serpent's tooth is a thwarted heart's desire. Verily."

"You shouldn't let him intimidate you," she said.

"I'm not intimidated," heatedly. "I just believe," coolly, "that you have a moral obligation," puritanically, "to help out friends in need."

"The only help he needs," simplistically, "is a good kick in the rear."

Silence.

"Be sensible, Mike! Helping doesn't mean giving your arm to a leech! Maybe the hermit crab can do something great if he doesn't have a shell to hide in!"

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"Yeah," I observed wittily, "so that's how you rationalized it. You were just kicking a crab out of his snail shell. And what if the crab gets eaten?"

"John," she said, "will never be eaten. Just the poor snail. Happy birthday, Mike."

And gone.

"Well," I told myself, ever so maturely, "she didn't leave a present. Guess she thinks her gangly presence's enough."

And I guess, in retrospect, that she was right.

The Idea came to partial fruition the next day. Upon returning from work at the garage, I found that an incredible collection of junk from a nearby scrap yard had found its way inside our apartment. I also found that our apartment had become a ground floor one with a picture window, called "Easy Access" by the resident genius, which cost fifteen dollars per month more than the old one.

"That's all right," assured the resident genius. "When I market the Goat I'll be rich."

"That's nice for you," I told him, "but what about the sap who pays the rent?"

"What?" he said.

"Oh," he said.

"I guess you'll be rich too," he said.

"Thank you," I muttered, and went into the kitchen to get dinner. Then I came back out again.

"Would you mind telling me, Resident Genius," I demanded, "what your bloody trash is doing in my kitchen?"

"*Your* kitchen!" he cried.

"Yeah," I said, "my kitchen by right of monthly payment. So speak up!"

"The kitchen," he explained stiffly, "is the Design Room, and that 'trash', I'll have you know, is the start of a metal detector. Jeez, Mike. What's got you so uptight?"

"Nothing," I evaded, retreating to the kitchen with vague guilt feelings. "I saw Angela yesterday."

"Angela who?" he said. Guilt feelings disappeared.

"Your ex-wife, fool!"

"Oh God," he said. "Don't tell me Miss Prissy Pushy's—"

"Mrs., fool!" I shouted. "And keep your mouth shut about her!"

"Jeez," he said.

"Jeez, yourself!" I shot back, and slammed the kitchen door for good measure. I stood in the room for a silent minute or two, feeling slightly ridiculous and at the same time ridiculously pleased with myself and my snappy comebacks. The room itself was in a remarkable state. Wiring slopped like bird's-nests from the sink. The stench of melted plastic held fast despite the fan. I surveyed the carnage and drifted over to the dining table. A blueprint peered out through pencils and day-old ravioli. I pulled it out, reveling in the clatter.

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"Mechanical Goat," said John's telltale scrawl. I looked a little harder.

The Idea had grown, had metamorphosed from an abstraction to a bona fide concrete. In perspective drawings, schematic drawings, structural drawings and detail drawings, the Goat revealed itself to be a bland metal box twelve feet long and six feet high. Centipedal balloon tires fringed the sides, driven by electric engines which were fed in turn by fuel cells and/or roof-mounted solar batteries, weather permitting. The

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trailing eight feet contained a series of storage bins. The leading four were a mass of ducts, suction fans, magnets and brushes. Jutting out the front, like the claws of a freak praying mantis, were a pair of gimbal-mounted cutting torches. The entire construction was sheathed in duro-steel and looked like a T-22 armored personnel carrier, only more potent. The price tag looked like the gross national product of Luxembourg, only bigger.

I was impressed. I scanned the sheets, traced out the functions of subassemblies, made a correction in his relay layout, and returned to the living room.

"That's quite a device," I said. "The Goat, I mean."

"Sure is," said John amiably. "It's the most original, creative, and practical machine since the cotton gin. Just set it loose by a freeway and bingo, nonstop, twenty-four-hour trash removal. The cleanest medians in the world! Hey, come on. I'll show you the plans."

"I just saw the plans," I told him.

"Never mind that," he said, peeved. "I'll show you what those lines mean. Lord. You laymen think you know everything! Come on."

"Aren't these gorgeous relays," he was saying, five minutes later.

"Yeah," I told him. They were mine.

Then it's July, eleven months after the plans first spread through my captured castle. The location is I-96, heading in toward Detroit. The fields, still clinging to their bleached and willowy chlorophyll, have all the grace of bathroom rugs left moldering between highway and railroad tracks. A hazy sky hovers twixt blueness and thunderheads, as though God knows not whether to laugh or cry.

But other than that, things that day were about the same as they had been eleven months before, when John Gordon Drey, looking out his car window, had said, "The fools," and Michael Johannen, uncramping his legs in the rusting Pinto, had retorted, "What fools?" and John Gordon Drey had said peevishly in return, "The workmen, Mike. The guys collecting trash." Except that now Michael Johannen had a whole median to stretch his legs across and there were no poor fools but only some rich ones, not to mention John Gordon Drey himself and one dull metal box which, when looked at objectively, was what the whole affair was about. And that was enough.

"Yes, gentlemen," John was saying in his naturally pompous manner, "the Goat is, even speaking with due modesty, a Revolution in litter control. Completely automated, completely independent of wall socket or gas tank, solidly con-

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structed to withstand the elements, capable of locating, removing, identifying and separating waste material, it is among the finest examples extant of Creative Engineering. And, I might add, a testament to the shrewd financial judgment of our many distinguished guests, representatives of the front lines of Progressive Thought in industrial and governmental circles."

"Get on with it," said Angela, nudging me to make sure I noticed.

"Shush," I said.

"Come on," she snapped. "You're not listening to that twaddle any more than—"

"Shush," I said.

She kicked my ankle, discreetly.

"Run by solar energy," John was saying, "the Goat is, nonetheless, capable of operating on fuel cell power alone. This, combined with its solid construction, guarantees all-weather, twenty-four-hour litter control. But enough said on the limitless capabilities of this machine. Before we are given a demonstration of its bad weather operation," lukewarm smiles, "let us set the Goat in operation. 'Ask not,' " he added profoundly, " 'what your country can do for you, but what you can do for your country.' "

"What was that about?" demanded Angela.

"Relevance," I informed her. "The cream for the cat; the cheese for the rat."

"Aaah," she said knowingly. "He's such a sap."

I tried a smile. It was lukewarm, too.

John, though, was beaming. Moving to a packing crate, he reverently lifted an excelsior-dripping ball of wire and metal from its wooden crib and huddled over it protectively.

"Gentlemen," he said, "the brain of the Goat. It is this device that will integrate all the varied and ingenious workings of the Goat into a smoothly functioning whole."

Beckoning with his free hand to two bored-looking workers, he glided over to an open panel in the Goat's monotonous hide. The coveralled gentlemen, one chewing, one smoking, followed, dragging an acetylene torch. John carefully picked the last shreds of excelsior from his precious burden, then inserted it deep into the black hole. He remained poised there for some minutes, attaching wires and other connections, then stepped back and lowered the metal flap.

"Gentlemen, if you please," he said.

The workers exchanged sardonic grins, lowered their face masks, and started welding. We all averted our eyes until the hissing had stopped and the access hatch to the brain had become one with the rest of the side.

"Gentlemen," John then informed us, "the Goat has been activated."

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We all stepped back, the workmen withdrew with their torch and tobacco, and every last one of us, millionaires and garage men, waited, stock still, while the Goat basked in the sun without quiver of tire or wiggle of cutting arm and the only movement came from heat waves squirming off its hide.

"Uh," said John, "the sensors, no doubt, are sweeping the area now, uh, no doubt."

It was then that I noticed. This was a gala inauguration, was it not? And you can't have trash strewn around a gala inauguration, can you? To prepare for the introduction of a labor-saving litter controller, some misguided bureaucrat had sent a contingent of laborers out to pick up every shred of trash around!

"The dolts," I said, and, removing one of my shoes, I tossed it about ten feet in front of the lethargic box. At 11:32, July 24, 1978, the Goat began to move.

"You're the dolt," Angela said on the way to her car. "What are you going to walk on now?"

"Pride," I told her. "Superiority and pride."

And, I told myself, one hell of a lot of blisters.

From the fine perspective of history, many things are evident that once remained obscure. In retrospect, I realize that then was the time to leave John and accept the vacation offer that Angela extended as the Goat dwindled in the rearview mirror and the bathroom-rug fields swayed to the tentative, opening gusts of the storm. He had money, fame, and an offer to work in the design department of MacDonald-Douglas and Affiliates Applied Technology Plant in Savannah, starting September. He could have lasted two months on his patent money and publicity. He could have eaten Big Mac hamburgers until he reached Georgia and a steady income. And I could have gotten away scot free.

Just follow the freeway a-winding up and down over the Penn Central tracks, past the Ford plants, through Detroit, across the river to Windsor, on up to Ontario, across Quebec, plunging nonstop in Angela Batterly's Maserati to her Nova Scotian retreat where she spent her summers when not pulling in forty thousand a year from her New York City bank vice-presidency. I could have watched the waves come booming in to the cheers of the curlews and felt the sand shift up between unshod toes and let my consciousness sweep up to the aurora borealis and purge itself in a shimmer of ethereal light and all that, as would happen eventually regardless. What I'm saying is that it could have happened sooner and spared me another week's scars. But then, I've always liked symmetry.

So the bad times had finally

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changed to good times, and the rise of our empire was complete. Over the eleven preceding months, as the Goat had changed from blueprint to sheet metal in the centers of industry and government, our mode of life had been gradually improving, leading at last to a rented house with ample garage space in Detroit's northern suburban sprawl. True, my auto-mechanics job had continued to pull in the greater part of our livelihood, but it was a livelihood no longer diverted into salvage-yard scrap or even food, really, as John was swept increasingly into the circles of luncheon conferences and dinner parties where his insufferable arrogance could grate against the insufferable arrogance of cigar-puffing execs and the circumspect tolerance of government agents adept at seeing through mud to solid profit. Besides which I had, while John was hobnobbing with government contractors, so thoroughly renovated Sandusky's Auto Service/Auto Parts, by way of my own junkyard pilgrimages and scribbled designs, that Sandusky had offered his prize employee a pleasant salary increase as reward for a pleasantly swelling customer list. Which had done my ego as much good as it had my pocketbook. For the first time since the aerospace layoffs I had been able to look myself in the eye with pride. And since John resurrected his particular genius for submerging himself in absorbing tasks, we had both been too busy to infringe on one another's nerves.

In short, I had already been getting back into the habit of enjoying life, and when the Goat moved implacably down upon my shoe that July inaugural day and sedately consumed it, delegating the plastic sole to one storage bin and the cheap leather to another, I figured I'd just about reached the door to paradise. And I was sure of it when John didn't even bother to return home with us. I shared a drink with Angela, declined her offer again, waved good-bye to her hot-footing car, and went to bed. The next day, I told myself, I'd buy the best patent leather shoes on Earth, and hang the bloody expenses!

At three a.m., the phone rang.

I listened to it for several minutes, feeling the damp bedclothes entwined about my legs and wondering whether I should get up. I decided, no, I'll let whoever it is ring his ten times and go to bed. Maybe, I thought, there's been an accident. Well, I told myself, if anyone can handle an accident it's John. Then I thought, maybe it's an accident with Angela and I sat up and realized that the phone had rung at least fifteen times, which suggested that someone was set on getting me up, three a.m. or no, and I roused myself. The bedclothes unraveled down the hall behind me, furry anacondas lounging on the floor.

"Hello," I said.

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"Mr. Drey?" said the telephone.

"God, I hope not," I said.

"Beg pardon?" said the phone.

"Permission granted," I said, smiling inanely. This is, I told myself, no way to behave.

"Mr. Drey," said the telephone stuffily, "I apologize for the late hour, but I have serious news, and would greatly appreciate your help."

Properly reprimanded, I complied. "My apologies," I told the receiver. "This is not Mr. Drey. He has not yet returned home. This is his constant comrade through adversity." You're slipping, I told myself. "May I take a message?"

"You are Mr. Johannen?"

"That is correct."

"You assist Mr. Drey in the Mechanical Goat project?"

"You might put it that way."

"Mr. Johannen, this is the State Police. We have been informed by the Highway Patrol that the Goat is no longer in its designated area. We would appreciate your assistance."

"My God," I said to myself.

"Beg pardon?"

"Nothing," I said hastily. "I just—where is the Goat?"

The telephone hesitated.

"Nobody knows," it said.

"My God," I said.

"Beg pardon?"

"I said, 'My God!' " I snapped. "I'll be the yellow Pinto, MNM-830, heading west on I-96 at a hundred miles an hour. And if I were you, I'd start tracking down Mr. Drey and pronto! I haven't seen him since yesterday noon, but God knows we'll need him maybe. I," I stopped to catch my breath, "thank you for calling."

I hung up. The anacondas lay expectantly in the hall. The mantel clock registered 3:05. "My God," I said, and ran for the car.

Not, as I reflected later with the night air cutting through my pajamas and the Pinto shaking over the pavement, that there was much I could do. The Goat was John's baby, which meant he had faith in it. And when John Gordon Drey had faith he never planned for failure. I remembered the ceremony of the day before, the welding shut of the hatch to the brain. That had been a testament of faith. There was no other way in. The Goat was designed to stop when its bins were full to capacity, at which time it would trundle to a designated dumping zone, where a trash truck, automatically notified by the Goat's transmitter, would be waiting to transfer the rubbish to a recycling center. As far as I knew there was no other way to stop it short of getting to the brain. That would mean cutting through a half-inch wall of duro-steel, or possibly finding another way in. Well, the suction fans could pull you in through the intake mouth, after which the trash separators would delegate your various parts to the appropri-

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ate storage bins, or you could try opening the bin access hatches, which would leave you in the same place, only intact. There were access panels to the ducting and fans, but they were several tangled feet from the brain. There had been but one relevant hatch, and Showman John had welded it shut.

The highway railing drifted over to start a conversation. I watched it listlessly and we ran along side by side, an inch apart. Casually, the steel corrugations reached out to bump my car and send it skidding across the lanes. I watched that with interest, too, but somewhere along the line my reflexes woke up and sent the Pinto slewing back into place. It was 3:45. Ninety, the speedometer said. A familiar sign began rising in the distance, and I slowed down to scan the writing.

"Your Highway Taxes At Work," boasted the sign. "The next twenty-five miles patrolled by the Mechanical Goat, a government-subsidized litter-control machine, keeping the Interstate Highway System beautiful for you, the American Taxpayer." I hit the brakes and pulled off onto the center median. I cut the engine, listened to my Pinto whinny and subside, and got out. The wind billowed my pajamas beneath a coldly disapproving moon. This was it. There were the tire tracks from the limousines and Angela's Maserati. And here I was. And here that blasted, 'poxy Goat was not.

Far to the east an electronic siren whooped up in ascending intervals, growing louder by quantum jumps. The police, I decided. At least three of them. Before long I could see their lights lancing down the barren, early-morning freeway; their brakes squealed in tandem as first the sign, then my battered car, cut into their line of sight. I got off the hood where I had propped myself and stepped out to meet them.

"Captain Swanson," said the apparent leader, a tall, gawky young man who probably wore contact lenses and reminded me of myself. "And you?"

"Michael Johannen. Pleased to meet you."

Embarrassed silence.

"Uh," I said, "have you located Mr. Drey yet?"

Swanson jerked back his wandering attention.

"No, no. They've got a small army looking, but no luck, I guess."

We stood silent in the moonlight, having nothing more to say, while Swanson's own army assembled, a bleary variety-pack of officers, loaded down with tear gas, walkie-talkies, pistols and, here and there, M-16 automatic rifles.

"Is this all of you?" I asked.

"What?" said Swanson. "I, oh sure, yeah, that's all of us."

"Well, then," I said, tucking in my pajama tops, "tallyho!"

And we were off, in pursuit of the great tin bogeyman. I knew it

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had been through the area, for the median was clear, no paper, no bottles, no cans. Also no tire tracks. Thanks to its ponderous flotation tires the Goat left no trace of its passage beyond a conspicuous neatness.

"Mr., uh, Johannen," said Captain Swanson after a while, rubbing his hands across his eyes, "just, uh, what are we doing, exactly?"

"Well," I told him, "exactly, we're strolling down a freeway looking for a big metal box that the Highway Patrol has already told us isn't here."

Swanson nodded to himself, sagely.

"Yup," he said, "that's what I figured. That's just about it." He turned to me curiously. "Doesn't it seem a bit pointless, I mean, sort of useless, even to you?"

"Well," I ruminated, "the way I look at it, sooner or later we're going to reach a point where the median isn't clean anymore, at which point we can safely assume that the 'poxy Goat left for the open range. Of course, we could save time by driving to that point instead of walking, but that would take a lot more initiative than I've got left in me right now."

Swanson looked at me blurrily, running his tongue along the inside of his cheeks so that they bulged like a chipmunk's, first right, then left.

"Sure enough," he said, and turned. "Hey!" he shouted. "Everyone back to the cars! Drive west till you see trash, then get out and look for traces of the box leaving the road! You follow me?"

They followed him, and we two started back toward my Pinto.

"If you don't mind," he said, "we'll use your car."

"Who am I to mind?" I said. "Me, I'm just a citizen. You're authority."

"Yup" said Swanson, "guess that's so. See them running for the cars?"

"I see them," I admitted.

"Bet you do," he said with satisfaction. "See, you can always get up initiative if'n you need it. Even at four in the a.m."

"That's very profound," I said.

"Hey?"

"No, no," I assured him, "I mean it. That's profound. Getting up initiative when you need it. Very profound." I looked darkly in his direction and thought about long-term-parasite John. "Are you some kind of guardian angel?" I demanded.

"What?" he said.

"Nothing," I told him. "Just a coincidence."

"Sure enough," he said amicably. "Whatever you say."

It wasn't a coincidence that the Pinto was too small for us. It had always been too small for me, and Tom Swanson was no midget. We bounced painfully onto the concrete and pursued the dwindling squad cars, searching for space for

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our legs. We were so busy doing that that I nearly plunged into the end of the convoy when the others slammed on their brakes.

"This is it," I said. "Again."

"Yup," he said. "Again. Tallyho."

We spent a minute extricating ourselves, then tramped down to the men huddled on the right shoulder. The median was still clear of trash for about a hundred yards, but beyond that a general resumption of chaos could be seen, like dirty foam on the lip of a tide. What held their attention, though, were the more immediate remnants of a sign. Part of it read: "Lansing 57." The rest was missing. The melted edges told me that the Goat's cutting torches had been at work.

"Well?" said Swanson.

"Well," I returned, and tried to think.

What had happened was pitifully clear. The Goat had trundled this far without a hitch when, by purest chance, it had stumbled upon the impossible variable, a highway section devoid of trash for at least a hundred incredible yards. There, in the implacable light of the moon, the Goat had idled, to track down its next target. First the three-hundred-and-sixty-degree sensors had made their five-meter-radius sweep. Nothing. Then they had made their ten-meter sweep. Still nothing. Fifteen meters. Not a can. Twenty meters. Not one yellowing newspaper. But at twenty-five meters, the jackpot! A chunk of metal bigger than any the Goat had yet found, twenty-five meters away on the right. The box swung around in instant pursuit.

Perhaps there was a moment's hesitation as the vertical sensors reported the transition from grass to concrete. The computer brain had been programmed against concrete, but it moved swiftly into its contingency plan. The three-hundred-sixty-degree radar searched for objects approaching at dangerous velocities, but found none on the late-night freeway. Electric engines whirred, balloon tires spun, the Goat heaved itself across the highway and into Nirvana. The world's biggest aluminum can! The acetylene torches swung on their gimbals to hone off pieces small enough for the suction pumps to handle.

It must have taken a long time. The sign was big, and even after one piece dropped out of sight and out of mind onto the solar battery banks the amount remaining was prodigious. Undaunted, the machine nibbled away, until all but that errant chunk were gone. Then it looked around. The five-meter sweep. Nothing. The ten-meter sweep. Jackpot. More trash to the right. Reassured by the presence of grass underfoot, the Goat rumbled

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over and down the embankment, gnawed its way through a barbed wire fence and, lured by the paper and bottles and beer cans and panty hose lining a country road, it set off across country. And we, many hours later and many miles per hour slower, followed, lured by the piece of traffic sign that had fallen off when the Goat lurched over the embankment.

Swanson and I stood knee-deep in grass, looking down an awesomely clean dirt road winding dimly into the distance.

"How far could it be?" he wanted to know.

"Well," I told him, "assuming that it hasn't had to chop up any more signs and is just sucking up things straight, it should be making, oh, fifteen, sixteen miles per hour. And for how long is anybody's guess."

Swanson considered. He looked at me sadly across his prominent nose.

"Tell me, Mike," he said. "Could this here beasty of yours be dangerous?"

"We-ell," I said. (Let's see; John had said something about a built-in response in case the Goat was beset by vandals. And if some farmer came out and found the beast chopping through his eight-thousand dollar tractor . . .) "We-ell," I said, "if some farmer came boiling out of his house with a pitchfork, and the sensors picked up the metal, I wouldn't feel too secure."

"Yup," nodded Swanson to himself, "that's kinda what I figured. And you say this beasty might be making fifteen miles per hour?"

"Or sixteen," I told him.

"And," he finished morosely, "it may have been making fifteen, or sixteen, miles per hour for five or six hours maybe. I figure we better do something."

He fingered his walkie-talkie.

" 'Lo," he said. "This is Swanson. Yup, Swanson. Say, you found that Drey fellow yet? You haven't, huh? Well, in that case, Kathy, tell you what. Get me the National Guard."

We got the National Guard at about 4:50, in three Bell Iroquois helicopters, while a King Cobra gunship with guide-line antitank missiles hovered overhead and occasionally eclipsed the moon. All told, Lieutenant Fletcher informed us, there were twenty-four combat-ready infantrymen at our disposal, two with bazookas, while a Quad-40 antiaircraft tank (it was all they had, he apologized) was on its way from Pontiac with an armored personnel carrier and two trucks. He would, he informed us proudly, soon be in command of nearly a hundred men, more than he had ever commanded before. His father had been a colonel in Italy, we learned, with a thousand soldiers at least, but that had been wartime and nowadays it was quite a thrill just to have a flight of helicopters and a company-sized ground force

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with armor. And where was the target, anyway?

We told him that we didn't know and that we only wanted his helicopters to fly around and try to track it down for us, but before he was disappointed we assured him that his troops would be useful in looking, too, and that if they did find the Goat it would be quite all right if he deployed a hundred, two hundred or a thousand infantrymen to keep it at bay, though we would rather they didn't open fire. It was, after all, relatively harmless.

What was this, this "Goat," he wanted to know.

This 'poxy Goat, Swanson corrected him.

An automated-mechanical-trash-picker-upper, I told him.

"Oh," he said, visibly shaken, and rode his Iroquois back into the sky. After a moment's comical hesitation the aerial armada spread out in a ragged search pattern and moved on. There would be little sleep north of I-96 that night.

"Nice fellow," said Swanson.

"He's nothing," I told him bleakly, "to John Gordon Drey."

"How so?" he inquired.

"Ah," I said. "That you won't understand until John Gordon Drey arrives." Which happened shortly thereafter.

This time it was a police helicopter, mysteriously equipped with pontoons instead of the usual landing skids. As such, it opted to settle in a duck pond behind the farm we were reconnoitering, where a submerged 1963 Chrysler ripped open one of the incongruous floats and left the whole insane contraption at a fifteen-degree angle amidst the fowl. I helped John out, wading knee-deep in muck. He stared at me happily.

"Howsadoin Mikey," he said. "Howcumserindawader? Lo-ordy."

"He's all yours," swore the pilot, poking at his sunken helicopter. "I had to ride with that all the way from Lake Michigan."

"Thasright," giggled John. "Pick-udmeupdidnchee? Offolsenadorvan-wyckeesyachtdidnchee?"

"Did you?" I asked.

"As God is my witness," said the pilot proudly, "with a gale warning up and no landing pad but the lake and that running six foot swells if they was an inch, so help me God! So then," he finished furiously, "I sink in a lousy duck pond!"

"Quack quack," wheezed John. "Quack quack ducky!"

"John," I said.

"Quack quack," he said.

"Over you go," I finished, and dumped him in the pond.

"Lord, Mike!" he roared. "What's the big idea!" and things were back to normal.

"Mr. Drey, I presume," said Swanson, extending a hand as I steered the dripping John to shore. "I'm Tom Swanson, State Police."

"Congratulations," snarled John. "God, I feel lousy. Mike, where'd you get to?"

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"Right beside you," I said drily.

"Damn fool thing to do," he said, "dumping me that way. I need some coffee. What's going on?"

"Your Goat, John," I told him, "your 'poxy, flea-bitten Goat is running amok somewhere, and Little Bo-peep doesn't know where to find him, much less how to stop him when she does. And I hope, I pray, no less, that you can unclog your head enough to figure it out."

"Of course I can," he said. "Where's the coffee?"

"There isn't any coffee," I told him.

"Jeez," he said.

Swanson popped his head out of the squad car he had ducked into. "It's Lieutenant Fletcher," he announced cheerily. "He says they've found the Goat. Hold on a moment. He says the King Cobra found it. He says that's a good helicopter, a, hold it, a real good helicopter. He says it's the best helicopter in the National Guard. He says it's the best—"

"Damn the helicopter!" I raged. "Tell us where he is!" Swanson smiled and passed it on verbatim. "All aboard," he said a moment later. "We've gotta way to go."

And go we did, gravel drumming the bottom of the car, dust streaming out in dirty contrails, radio reports crackling in our ears and the frequent screams of helicopters drowning out the early-morning birds. The moon was a translucent slip in the west, the sun just striking the peaks of piled cumulonimbus, the road as bone-jarring as the Aberdeen Proving Grounds and John as ear-jarring as the worst of times I had almost forgotten while I filled him in on the situation. And somehow I succeeded, over the course of half-an-hour's unforgettable movie-chase spectacular, succeeded so well, in fact, that by the time we swung onto the runway of the new Genesee County Municipal Airport he was able to settle back in the black upholstery, look out past the wire grating separating us from the front seat, and say, "Jeez, Mike. I don't know what to do."

"Well," I told him with a lurching, sinking feeling, "you'd better figure out something fast, because I think we're about there," there being:

The end of the main runway, where a United Airlines 737, just swinging out for its take-off run, had sat motionless a few extra minutes while a private Cessna cleared the runway, only to find, when it again started to move, that a large metal box had darted from the undergrowth and commenced sawing into its soft aluminum underbelly in such a way that moving forward would involve leaping a six-by-twelve-foot block of duro-steel. And that was the way matters rested five minutes later, when Lieutenant Fletcher's "real good helicopter" bored in to find its prey.

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That was also the way matters rested thirty-five minutes later, after our squad car skidded to a halt among six helicopters, several airport crash vehicles, three more squad cars, two National Guard trucks and a hundred soldiers who had, by some awesome application of self-discipline, refrained from firing, even when egged on by an antiaircraft tank charging cross-country with fragments of fencing still stuck to its khaki snout. I was impressed, first by the chaos, then by the calm, collected attitude of all those present—the hundred weekend-warriors, the twelve police, the fifteen-odd airport officials, the sixty airline passengers—all of whom stood idly about, chatting and watching the Goat execute its victim with the finesse of an open-heart surgeon. No one, it seemed, had the heart to disturb its meal.

"Look at that!" crowed John. "Forty-five miles cross-country and not a scratch! What perfection! Lord, what perfection!"

"All right, Mr. Present Perfect," I growled, "go get your loved one to stop."

"Me?" he said, aggrieved.

"That's right," I told him.

"Aren't you going to help? Lord, Mike!"

I looked at him, more carefully than I had for a long time.

"No," I said eventually. "No, I'm not going to help. I'm going to do it all, sooner or later, and you know I will, too. But if you want to call it 'helping', I'll let you. Now, are you ready?"

"Uh," he said tentatively.

"Good," I said, "let's go."

We started across the concrete, picking up momentum as we approached the massed people. They were worth watching, too, in and of themselves. All their inactivity had lulled them into an even deeper inactivity. Having let the Goat start cutting, when all they needed to do was back up twenty yards or so, they could no longer conceive of challenging it. It demanded its way; they let it have its way, and thus were they trapped. Now two people had appeared with a certain sense of determination about them, and the crowd made way like water. But still they made no move of their own. Maybe they didn't see the necessity for it. Maybe they were unaware that they might hurt themselves by maintaining the status quo. It often takes a different perspective to see things in their proper light. My perspective, for instance, told me that the Goat, which had now transferred its attention to the wing, rotating and extending its cutting torches to hack away overhead, was something like five minutes away from sticking a shaft of white-hot acetylene gas into fifteen thousand gallons of aviation fuel. Sometimes you need to act.

"John," I said, "there isn't any way to deactivate this beast?"

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"Just by removing the brain," he said.

"How long would it take to cut that duro-steel? Quick!"

"Jeez, what's your rush? Twenty or thirty minutes, that's all."

"Well then," I said sweetly, "why don't you go over to that airport official, the one in the checked jacket, and ask him to get a cutting torch and a crew to work it, O.K.?"

He gave me a curious and suspicious look.

"If," I added, "it's not too demeaning to ask."

His face was a study to behold.

"Of course I'll ask," he snapped. "I'm no prig like others I know!"

Turning on his heel, he strode toward the official. And I turned and sprinted for the plane.

Once, years ago, I flew an Air Force ROTC F-5, but a Boeing 737 is a heck of a lot different. I didn't want to fly this baby, though. I just wanted to roll her down the runway. I bounded into the cockpit, swung into the pilot's seat, and looked for the taxi controls. The plane quivered around me; the crew had mercifully left her powered-up. A quick look out the cockpit window revealed that the Goat, in maneuvering to assault the wing, had cleared the undercarriage. Releasing the brakes, I increased the power and, almost imperceptibly, the plane inched forward. I moved a few feet and stopped, uncomfortably aware of the jam of men and machines ahead of me. I looked out the window to see what was happening below.

Dedicated to its task, the Goat had rolled along in pursuit and resumed work as dangerously as before. I had to divert it. I had to get the plane far enough away, or some other "food" close enough to the box's sensors, to make it change its target.

Activity was stirring in the crowd, self-interest prevailing over all. The National Guardsmen had scattered and were moving their tank. It was contagious. With the prospect of a jet airliner crushing their tender hides, the masses were clearing the runway. Reassured, I started the aircraft rolling again.

"Mike!"

Small and tinny, a voice played against my ears from outside. I looked down to see John running frenetically beside the fuselage.

"Mike," he was shouting, "what are you doing! They're bringing the torch!"

"Never mind me!" I shouted back. "Feed the Goat!"

"What!" he gaped.

"Your shoe, damn it!" I raged. "Throw your shoe at the Goat!"

He gave me an expression matched only by the one given me earlier, then kicked off one shoe and held it reflectively.

"Throw it, *dummkopf!*" I roared as he slowly receded behind me.

He threw it. Some maintain that he threw it at me and missed, but

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in any case, the British Oxford landed directly beneath the Goat's blunt nose, and who am I to complain? Looking out the window I could see the Goat halt, suck up the leather, and immediately resume the chase. But I was gaining on it.

"The other!" I shouted, hoping to be heard. "Throw the other!"

And John, whether on my urgings or, as he will coldly maintain, his own initiative, threw the other, and sent after it his jacket and tie, his shirt and trousers and socks, until the Goat was so far from its former prey that it gave up and furiously assaulted a runway marker light where, half an hour later, a triumphant, skivvy-clad John Gordon Drey extracted its feeble brain.

Tom Swanson and I observed the proceedings from the terminal building coffee shop. Then, when the diminutive figure had stepped back from the suddenly motionless box and the reporters had crowded around, we returned to our cinnamon doughnuts, final duty done.

It was pure curiosity that sent me back onto the field once my alter-ego officer friend hit the road for Detroit. The last helicopter was swinging up into fragmented clouds as I arrived on the runway; the Quad-40 and Lieutenant Fletcher had long since vanished in the general direction of glory, and only newsmen remained, poking fingers through the Goat's trash intake and noting with awe the singed skin of the 737's fuel tank. And, of course, interviewing John.

At the moment it was a battery of CBS cameras, the same group which had covered the Goat's inauguration some twenty-four hours before. A reverent hush fell over the crowding camera-wielders as the canticle was read to the masses.

"So," John was saying, "when I suddenly saw the danger, I told Mike, 'For God's sake,' uh, you'll have to excuse the language; just trying to be authentic."

"That's just fine, Mr. Drey," hastened the commentator. "We appreciate your accuracy. Yes sir, we do."

"Well, I must say, that's very kind of you gentlemen of the press, but anyway, 'For God's sake, Mike,' I said, 'move that DC-9,' what, oh yes, 737, 'move that 737 before the Goat cuts into the fuel tanks.' I would have done it myself, of course, but Mike is a registered jet pilot, and I thought, this is no time for glory, John. Mike can get that plane rolling faster than you and you know it. So I just went to Mr. Korowitz of the airport staff here and saw to it that the people and equipment were cleared out of the way and that we'd have a torch ready to start cutting as soon as the plane was clear. I, uh, how's the time?"

"Oh, you needn't worry about time, Mr. Drey; no sir, you needn't worry a bit."

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"Now, that's very kind of you gentlemen. I realize that time is precious to the fine press corps of this nation, so anyway, I saw that Mike had the plane moving, but I also saw what he didn't see, that the Goat was following right along behind him. In short, when he stopped we were no better off than before. That was when I started running out with an eye toward keeping him moving and at the same time distracting the Goat from the plane—"

He stopped and bulged his eyes a little as he saw me. I smiled at him and raised an eyebrow.

"Do go on, Mr. Drey," I said. "Oh, do go on, yes, sir."

His eyes unbulged. I give him credit. In all the time I knew him he never missed a step. Never.

"'Go on, Mike,' I shouted at him, and when he started to move again I tried desperately to distract the Goat. I was at a complete loss when suddenly I had, well, I suppose you might call it an Inspiration. If I could get some other object closer to the Goat's sensors than the plane, it would stop and clean up the nearest. That was when I threw my shoe and, of course, it worked. After that it was easy."

I drifted away from the enthralling monologue, cut through the airport terminal, and out into the parking lot, uncomfortably remembering that I had abandoned my Pinto on I-96. Just as I was starting to look for a taxi, though, I was surprised by a now familiar voice.

"Hey, Mike," shouted Swanson, "here's your car!"

There it was, every battered inch of it. And there Tom was, every battered inch of him.

"I was just driving along, you know," he said apologetically, "when I saw it sitting out in the median where you left it and I thought, sure enough, how's he gonna get home? So I had the boys drop me off, and I brought it back."

"Tom Swanson," I told him, awed, "you shouldn't have. Now how are you getting back?"

"We-ell," he said, "course I should've. You've done plenty for me, haven't you? And you have, too. Far as getting back, that copter, you know, the one in the duck pond? They've got it ready to go, and it'll be here any minute."

"I don't know," I told him, "what to say. Honestly."

"Well," he said, "you might say

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in times to come *Lead story next month is "Persephone and Hades," by newcomer Scott W. Schumack, who takes a couple of old science-fiction concepts and follows them to their logical, ultimate, and beautiful conclusion. The fact article is a stunningly detailed explanation of how to turn water into fuel for our automobiles, power generators, factories, et cetera. The answer to the energy crisis may be coming out of our faucets!*

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you'll drop in up at headquarters now and then, when you're able. Hoops, here's the bird. So long!"

And he was off, galloping for the drunken helicopter as it settled across the driveway. "I made it, by God!" the pilot was shouting. "Two cows in the way and chickens flying like snow, so help me God!" and gone. I reached out and patted the Pinto, careful lest it vanish.

"Well, Mike," interrupted John unexpectedly from behind. "What did you mean, back there with the newsmen? Was that any way to treat a friend?"

"Why, whatever do you mean," I said, not turning around.

He moved up to stand by the car, examined me for a moment, then shrugged the matter off. "Well," he said, "guess it's time to start back. I was just wondering how we'd get home. Thought I'd have to rent myself a car."

"Yeah," I said meditatively, "I guess that's what you'll have to do. You'll have to rent a car."

He double-taked. "What," he started, stopped, and finished, "did you say?"

"What I guess I'm really saying," I told him reflectively, "is that I've had it, you know, up to here. I mean, it's nice to sit back and watch that little box feeding and all, but sooner or later you're going to see that, so long as you give that Goat all he's asking for, he's going to ask for as much as he can, and maybe it'll be better for both of you to stop giving him feed. It'll make that Goat go back to trash-collecting, the way he's supposed to. And it might give that airplane a chance to fly again, for itself, instead of being glorified fodder. So I guess that's what I said, John. You have money. You have a nice, big job coming up, and you really don't need me anymore, if you ever did. So, let's say you start out being independent now and hire yourself a nice Hertz automobile, because I'm not going home."

"You really mean that?" he demanded, incredulous.

"Yes," I smiled, and since he didn't have anything more to say, and since I didn't either, I got into the Pinto and drove away.

So down I-96, the Pinto soft-shoeing slow and easy along the freeway and over the railroad tracks, the medians dirty, but wanting no more than a Goat with a few improvements to make them right, and on through Detroit and across into Windsor and long up Ontario and fast through Quebec and out to Nova Scotia and the headlands and the cheering curlews and the flicker of northern lights. And the driveway, curving up through a tunnel of firs, and beyond it the big oak door. And Michael Johannen stopped his car.

I walked up the cobble-stone sidewalk. I knocked on the oak door.

"Open up, Angela!" I shouted. "I'm home!" ■

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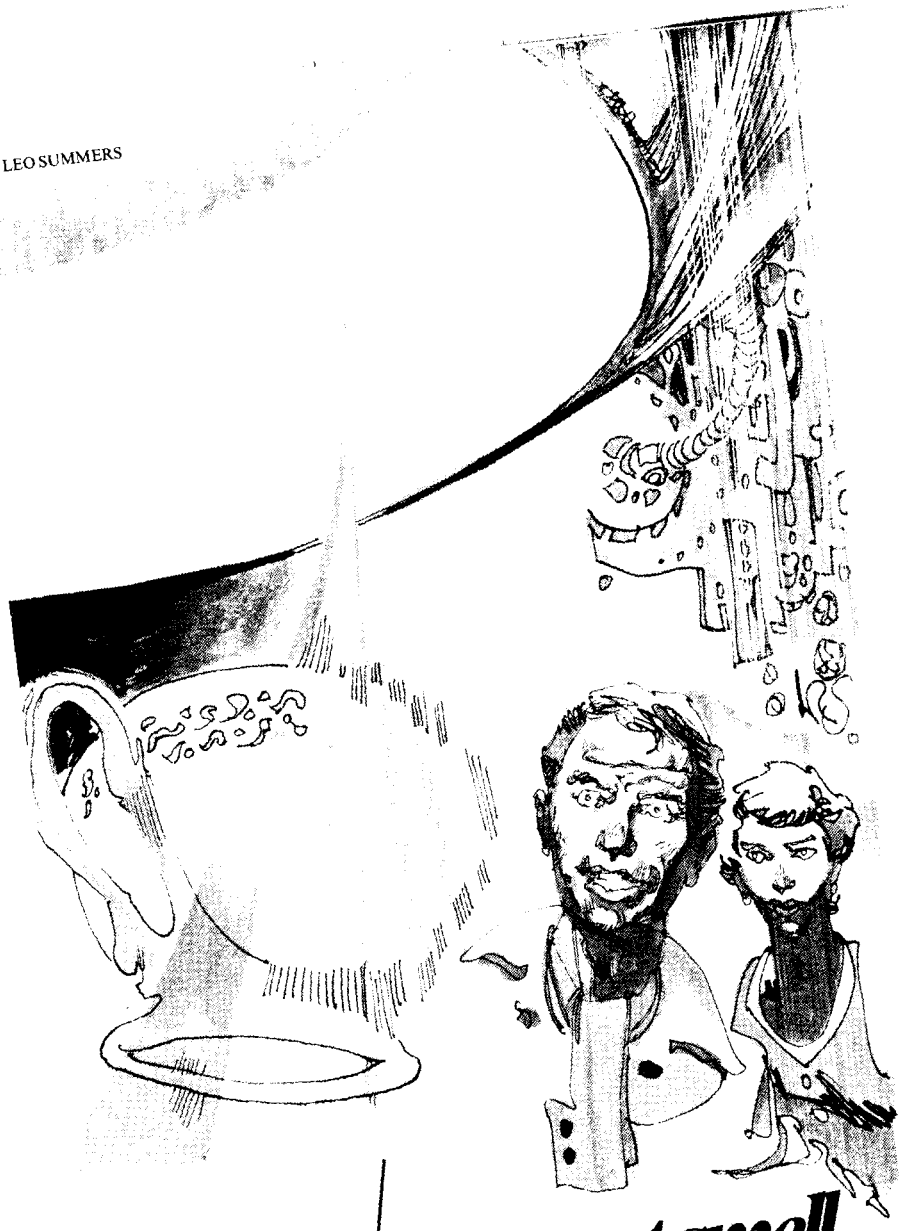
LEO SUMMERS



awrence A. Perkins

the sweet smell of the past

It's one thing to invent a time machine.
It's something else entirely
to find a use for it.

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"Fred dear, *must* you use one of our best teacups? Really, Fred?"

"Look, hon, I'm so sure that the machine will work that I *want* to use something important, something that means something to us. Besides, if it doesn't work"—Fred let his face sag momentarily to show her how dismal that would be—"nothing will happen. The cup will still be there. Either it works or it doesn't, and I've got to have a mass of not less than a hundred grams or more than two hundred."

Fred Finnacle firmly placed the teacup on the specimen stage of his machine and haughtily drew his rangy frame erect. "If it works, the cup reappears right there in half an hour. If it doesn't work, the cup stays there and you can fill it with black coffee for me. I'll need it."

Finnacle threw the last switch on his panel. The house lights dimmed briefly, the cup vanished, and there was a sudden stench of ozone in the air. "Hey, it works! I've invented a time machine! Hey, pour us a couple of bourbons! I'm famous! Let's celebrate!"

"Pour yourself a drink. I'll celebrate when I see that cup again." She wrinkled her pert nose at the ozone. "That smell reminds me. When I got home from the bank this afternoon, some smog had gotten into the house. I turned up the air bath to extra high and it was all right after about an hour, but I wish you'd look at it."

"Glad to, hon." He glanced uneasily at his watch and then at the silent time machine. "I wish now I'd set that thing for five minutes, but I did want to check the calibration."

Just then the doorbell chimed. Grimacing with irritation, Finnacle hurried up the basement stairs to see who was at the door. It was Frank Gibson, gasping and wheezing. Incapable of speech, he made desperate pointing motions—he wanted to come inside.

Gibson taught Chemistry 101 at Central College, where Finnacle had a section of Physics 101. Finnacle had resigned from a much better position in New York City to escape the air pollution, he remembered bitterly as he tugged Gibson inside and slammed the door quickly to shut out the mephitic vapors. The air was supposed to be good out here. Well, compared to New York's, it was.

Gibson sat slumped on the sofa, his chest heaving, for several minutes before he tried to talk. "Whew! It looked safe enough when I left the science building. Then the wind changed and we started getting it from the paper mill *and* the industrial center. I noticed that I was near your place, so I ran for it."

"Do you feel better now? We have an EKG telephone attachment, of course. Shall I dial the emergency clinic?"

"Thanks, but I'll make it home from here all right now. Have an

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EKG on my own phone, saves a lot of red tape."

"Well, if you're sure." Finnacle nervously glanced at his wristwatch. "The wind'll probably change again soon. But look, I've finished the machine I've been telling you about, and it's running right now. The test object was a teacup, and it's due to reappear in twelve minutes. Let's have a drink and go watch. What would you like?"

"Well—ah—I'd be delighted. A small Scotch and water, please."

Finnacle poured a generous Scotch for Gibson and an even more bounteous bourbon for himself. "Here you are. Shall we go watch the experiment?" He glanced at his watch. "It should come through in about seven minutes now. The machine's in my basement." He guided Gibson down the stairs. "Sue, you know Frank. The smog drove him in off the street, and he wants to see the experiment."

"Delightful," mumbled Gibson.

Susan's pretty face was uncharacteristically expressionless. "How much longer will it be before I get the teacup back, dear?"

"Well, of course the timing could be off a little. It's pure theory so far, except that the cup did disappear, didn't it? But it'll be there." Fred turned to Frank. "Thank God there's a logarithmic aspect to it. I can set the same dial to five minutes or fifty million years. Although, of course, I can't place the specimen stage fifty million years in the past."

"Say, this looks great, Fred! How does it work?"

Finnacle suddenly realized that he had wasted hours talking to Gibson about his theory, but Gibson's real interest now kept him from exploding. "Well, you know that there's a theory that an atom is a nucleus surrounded by orbiting electrons that are very small bodies about eighteen-hundredths the size of the nucleus, and there's another theory that the electron is a sort of cloud of vibrations, and there's even a theory that the whole damn atom is made up of nothing but vibrating electrical charges."

Gibson swallowed a large jolt of whiskey. "Shells. Valence electrons."

"Exactly. Look, there have been three different theories about light. One, light consists of corpuscles moving in straight rays. Two, light consists of electromagnetic vibrations in the ether. Three, light consists of photons with such oddball characteristics that we call them 'wavicles' and give up. But we still define colors in terms of wavelength. And Frank, did you know that lensmakers still use theory number one—and that for their purposes, it works?"

"You mean your machine uses photons?"

"No, no, no. I just mean that maybe two theories can be true at the same time, at least for experi-

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mental purposes. Anyhow, I've—"

"Where's my teacup, dear?"

Finnacle started and looked at his watch. The teacup had been gone for thirty-one minutes and fourteen seconds. "Hon, I told you the calibration might be off a little. My God, this is the very first experiment! But I don't think it'll be off by more than five or ten percent." He frowned at his watch again.

"Anyhow, Frank, I've been observing for years what I think are electron orbits, and they are definitely elongated. Let's just say it's *something* magnetic that has the form of an ellipse. And you know, I don't get to use the big magnetic lab often—once or twice a year. But every damn time I run the experiment, the orbits or whatever they are check out the tiniest bit rounder. At first I thought it was observational error, but it's consistent, and at an inversely exponential rate."

"Fred, I'm going to be very annoyed if I don't get that cup back!"

"Hon, I'll be worse than annoyed if you don't get it back. But Frank, after this had gone on for five years—every single reading giving me ellipses just the least little bit rounder—the idea hit me: that's *time*. And then I thought, if I can round the orbits I can move an object through time. I suppose I could work the other way, too, except that I can't imagine how anybody could increase the eccentricity. The long axes head randomly in all directions, in three dimensions. But providing a force to . . ."

Finnacle's voice died away. A puff of white powder had appeared at the specimen stage of the machine. Some of the powder gently swirled aloft to create an expanding cloud, but most of it dropped in a conical heap onto the square pan. At least Finnacle remembered to check the time: thirty-four minutes, six seconds.

"Fred! My teacup!"

Gibson stirred uneasily and tossed off the rest of his drink. "Thanks for everything, Sue, Fred. I'm sure the wind has shifted by now. I'll be running along. Got to get that EKG, never can tell what a bad run-in with smog like that will do to the old ticker. Don't bother, Fred, I'll find my own coat. Good night." He plumped his glass down on a workbench and fled up the stairs.

Finnacle wildly wished that he had an excuse to follow Gibson.

Susan eventually conceded that the failure of the experiment was a greater disaster than the loss of the teacup, although she refused to furnish another one to validate the chemical identity of the powder. Dolefully he bought two of the cheapest teacups he could find at a local department store. One he pulverized with a hammer; the other one he ran through his machine.

Gibson verified that the two heaps of powder were chemically

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identical. "But say, Fred, how did you manage to subdivide that sample 'B' so finely? Stuff was like moon dust!"

"Couldn't you guess? At least I got the control calibrated right this time. I set it for half an hour and it took thirty minutes and two seconds. By the way, how did the EKG come out?"

"What EKG? Oh, the EKG. Decided not to bother."

Finnacle nervously checked the outside air and hurried home before the wind could shift. Absently kissing Susan, he glumly sank into his favorite chair. "My machine makes good moon dust. Frank says so. Sure enough, the dust was disassembled teacup."

"Dear, you mustn't let this get you down so." She managed to put a smile on her pretty face. "I got off from the bank early so we could have a nice roast for dinner, and prune whip for dessert."

"It's not so much that I've put enough money into that machine to buy a small car, or that I've spent so many hours working on it. Hon, the damn thing almost works. Hell, in a way it *does* work."

He let himself be led to the dining table, and the roast was indeed nice. Over prune whip and coffee Susan's blue eyes lit up suddenly. "Dear, I just thought of something. Why don't we try it on something that's *supposed* to be finely divided? Like grinding beef, for instance."

He very nearly spilled his coffee as he leaped to his feet. "Have you got a piece of meat in the kitchen? I know you've got accurate kitchen scales."

"Meat? Sure I have."

"Let's go. Let's see—not less than a hundred grams—a kilo is two point two pounds, so a hundred grams is zero point twenty-two pounds, let's say a quarter pound. And not more than two hundred grams, zero point forty-four pounds, say just under half a pound."

By then they were in the kitchen. "Hon, can you carve a chunk that weighs more than a quarter pound but a hair less than half a pound? If it's over I don't really think it'll matter—probably just leave some of it on the stage—but if it's under, according to my theory the machine'll probably blow up."

Susan absently brushed a strand of honey-blonde hair away from her face as she plopped a steak down on one pan of her scales and then slid the counterbalance out until the pans balanced. "Two point three. The rats! The butcher's label said two point six." She ciphered on a kitchen note pad. "A quarter's too much. Hm-m-m. A fifth is zero point forty-six. You said zero point forty-four?" Expertly eyeing the steak she carved off a piece and weighed it. "Zero point forty-one."

He silently accepted the gobbet and led the way to the basement, where he plumped the sample on the specimen stage and then began

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throwing switches. "I've set it to five minutes. That's the smallest interval I have." He threw the final switch, the light dimmed, the meat vanished, and the sharp tang of ozone filled the air. Man and wife waited intently and wordlessly.

In precisely five minutes there was a soft *splat* and a brownish globule of viscous consistency appeared on the stage. It stank faintly of ammonia and hydrogen sulphide, and flattened slowly as they watched.

"Oh, *no!* breathed Susan.

Finnacle expelled the breath that he had been holding in a long sigh. "This thing must transmit molecule by molecule. It must have broken down the individual cells in the meat into millions of parts. I should have thought of that. I just naturally thought they would all stay together."

"Wait, don't give up yet. Let's try something else, something that's *supposed* to break things down into tiny particles. You clean up this—this mess and I'll measure out a quarter of a pound of rice. Let's see if the machine can make rice flour." She looked regretfully at the odorous mass. "That was *good* steak."

She brought the rice, he threw the switches, and they waited. This time the *splat* produced a gummy gray glob that smelled worse than the first experiment had. Susan looked at her husband with real alarm. "Look, dear, I'll clean up this time—it was my idea. Why don't you go pour yourself a drink? We'll think of something."

As a matter of fact, he poured himself several drinks before he finally poured himself into bed.

During the next weeks Finnacle taught indifferently, often leaving his students goggling at him. Perhaps it was the weather. Several times he had to take a taxi home, although he lived only three blocks from the campus. And his subconscious nagged him to look up the weight of a cubic meter of air at sea level, which is 1.2250 kilograms. His subconscious promptly told him that a tenth of a cubic meter of air—a cube about four inches to the side—weighed a hundred and twenty-three grams. Finnacle gloomily wondered what difference that made.

Going over his equations one day when he was supposed to be preparing a lecture on wave propagation, he suddenly realized that he needed only provide a specimen stage at the temporal point where the specimen reappeared—in other words, "now." Anything at the physical coordinates represented by the three-dimensional location of the receiving specimen stage plus the temporal setting of the machine should vanish from the selected point in time and appear on the stage "now." The field of the machine should lock onto the matter that had just the preselected degree of atomic magnetic eccentricity and

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round it just enough to pop it out on the stage. Or rather, splat it out. Finnacle shuddered.

Then he realized what his busy subconscious had been up to. The specimen stage was five inches by five inches, and the field extended upwards at least five inches. Unless he worked into a vacuum he would never have to worry about his hundred-gram minimum mass for his sample. He spent that weekend modifying the machine so that the stage would be at the receiving end rather than at the transmitting end when he threw the activating switch.

The only necessary datum missing for his next experiment was the date when his house had been built, or rather when the building had been begun. It was a good thing, he rejoiced, that the machine was already in the basement, an area that had been safely inside the earth before the house was built. It could be terribly dangerous to reach blindly into the past and grab a mass that could be as large as a four-inch cube. Just right—or just wrong—it could grab the heart right out of a man.

The house, he learned, had been built sixteen years ago. Just to be safe, he set the machine for twenty. Then he argued with Susan. "Look, hon, I'm doing this because I have to. I've put too much into this experiment to back out now. But this won't be like the first time, when all I risked was a teacup—and that didn't work out so well, remember? I could rig remote controls, I guess, but that would cost another thousand dollars and take too long. Besides, somebody should be ready to call the fire department, just in case."

"Don't be silly, dear. I'm sorry I got so wrought up over that teacup. I want to be with you, and I want to see what happens."

He finally compromised that she might peep from the foot of the basement stairs. When she was duly ensconced, he threw the switches one by one as he anxiously watched his instruments. His fingers were sweaty when he pulled the last one. The lights dimmed, he smelled ozone, and there was a pile of very fine dirt on the specimen stage. Finnacle danced a triumphant little jig with his wife.

But by afternoon of the following day he was glum again. Would the machine really handle two hundred grams of air safely? The college was eight hundred feet above sea level; how much difference would that make? Unfortunately, there was only one way to find out. Pity that the machine was in his house and not at a lab at Central College! But the machine was his own, and his house was the only place for it. There was no garage, of course. Both of the Finnacles walked to work. The town was small and people with private cars were unpopular.

As soon as he got home he explained to his wife why another experiment was necessary.

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"I understand, dear, but couldn't we have dinner first? And how will you know that it's really moving air? And won't it be awfully dangerous—not just the blowing up part, but you said that it could grab the heart right out of a man. I wouldn't like for that man to be you."

Finnacle, who had been on his way to the basement, returned to his favorite chair and sat down hard. "Unh! I hadn't thought of that. Either of those thats." He brightened. "But we're both here, aren't we? I mean, if the machine had grabbed a chunk out of me I wouldn't be here now, would I?"

"That's silly, dear. That's a logical paradox or something." Her brow wrinkled. "I wouldn't bet on that at all."

Halfway through dinner he dropped his knife and fork. "I've got it. Remember when we had termites and the exterminators put that gunk in the foundation? The basement stank so that nobody could go down there for weeks. And we'd recognize that smell, all right! It was almost as bad as the smog. Let's see, when was that?"

"Finish your dinner, dear. That machine's already had half a steak. I do believe you've lost ten pounds in the last month. Don't you like my cooking anymore? There's chocolate pudding for dessert."

After the pudding they both riffled through old checks and found out when the exterminators had been paid. They were both sure that the check had been written on the very day that the job had been done, and that neither of them had been in the basement for weeks afterwards. He had gone halfway down the stairs and then retreated gasping.

It was late, but they hurried to the basement—he to the machine and she to her post at the foot of the stairs. But just as he threw the first switch, she stepped into the room. "Dear, why didn't the machine explode after it transmitted that panful of dirt?"

"Get back, hon! Huh?"

"Why didn't the machine blow up after it transmitted that panful of dirt? After the dirt was gone it was working into a vacuum, wasn't it?"

His finger faltered on the second switch. "Why? Because the intake shuts off as soon as it has a sample. That's an important safety circuit."

"Then this won't work."

He looked at her blankly and then turned off the machine. "You're right, of course. Damn, why didn't *I* think of that?"

"*You* invented the machine, dear."

Schematics dancing in his head, he hardly heard her. "Hm-m-m. I should be able to wire in an override switch. But it will take hours, so I can't do it until Saturday."

Late Saturday afternoon Susan resumed her post at the bottom of the basement stairs for the third time as her husband began flipping

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switches and scanning his instruments. With the final flip came the familiar reek of ozone and waves of a heavy chemical stench, still familiar although the termites had passed into history nearly two years before.

"Shut it off! Shut it off!"

Quickly he stopped the machine, but the stench lingered thickly. He could have fled to purer air, but instead he stood and brooded. "Well, it works. I've got a machine that digs moon dust out of old basements and brings back the smell of the past. But what good is it? I hardly dare tell anybody. I'm sorry that even Frank knows about it. I'll be the laughingstock of the whole physics community. Why didn't it blow up?"

"Dear, will you do one more experiment for me, quick? Put that safety circuit back on and turn the dial all the way. You did tell me that it goes all the way to fifty million years."

"Why, hon?"

"Because who knows what the topography here was fifty million years ago? This might be deep inside a mountain. The odds are fifty-fifty that it'll be above the surface, though. It's only a few feet below the surface now."

"But why?"

"Maybe just because it's there. Will you do it for me, dear?"

Resignedly he restored the safety circuit, reset the time dial, and then went through the ritual again. The lights stayed dim several seconds longer, but nothing appeared at the specimen stage. Then, hesitantly, he killed the safety circuit. Instantly sweet fresh air began to well out of the machine—such bracingly pure air that it was almost intoxicating.

"What . . . what . . .?"

Susan ran to him, hugged and kissed him. "I love you, you millionaire!"

He was still speechless, pointing vaguely to the rush of fresh air.

"Dopey, fifty million years ago was the beginning of the Tertiary period. The dinosaurs had just died and the grasses and flowering plants had just appeared. There's never been any fresher air since time began." She inhaled luxuriously. "How do you think this'll grab 'em in New York?"

"But . . . but . . . I'm only a physics teacher, not a manufacturer. I don't even know how to apply for a patent! And . . ."

"My innocent lamb, you work at a college and I work in a bank. Look, in a month you'll be famous—the man who gave the world the breath of life. We can probably find some Tertiary rivers, too, and you can give everybody fresh, pure water—at a reasonable price, of course. Leave it to me. I know a patent lawyer and a good public relations man. But now let's just enjoy it, shall we?"

"What? Enjoy what?"

She inhaled again. "The sweet smell of success." ■

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MIKE HINGE

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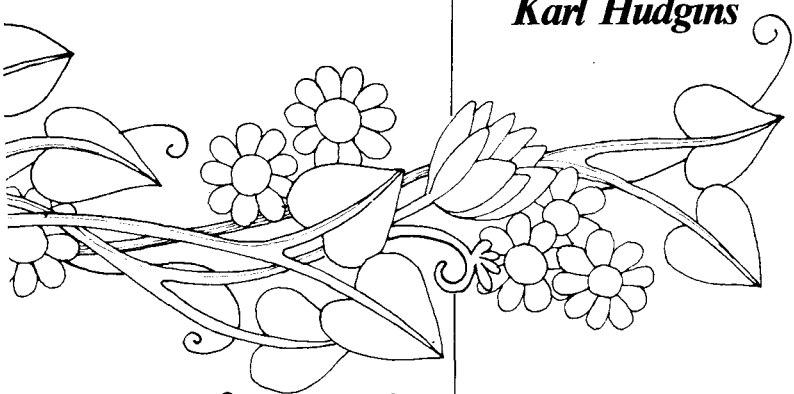
When the laws of civilization are allowed to lapse, an older law comes to the fore . . .

Karl Hudgins



the jungle

I came out of the rage slowly; after normalization was complete I rested a few seconds and then looked around the camp. It was bad, but I'd seen worse. I sent an after-action report to headquarters.

The reply came back immediately and in the clear. I was ordered to skip the red tape and report to the ambassador; they were even sending a chopper for me.

The order came through without being coded, that meant it was unofficial; they were sending a helicopter for me, that meant it was important. Put the two facts to-

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gether, add the ambassador, and you've got the setting for a political favor—the kind of job nobody likes and a lot of people die on.

I switched on the homer and fired up a cigar.

The quiet of the jungle was broken only by the soft, eerie cries of an unseen animal and the crackling of the wooden huts as they burned. The smoke from the huts drifted over the bodies, veiling and unveiling them as the wind twisted it—I guess to a lot of people they would have looked like ghosts.

To me they looked dead.

I shoved a fresh clip into the forty-five and wiped the blood off my knife, then moved upwind of the bodies and relaxed. After ten years of this I took my rest when I could get it.

Twenty minutes later the whine of a helicopter woke me up. The chopper sent the right recognition signal; I replied; thirty seconds later I was climbing a rope ladder.

The pilot apparently didn't want to be tracked by the other side; he made the trip on the deck at five hundred miles per hour. I don't trust anybody, pilots included, but after five minutes of watching trees go by at what seemed just over arm's length I sat back and concentrated on keeping a decent ash on my cigar, despite the excessive ventilation in the passenger compartment.

When the chopper landed, a pink-cheeked second lieutenant on a souped-up golf cart raced up to it and spoke to the pilot for a few minutes. He didn't sign any forms, the chopper's log would show a routine training flight.

He turned as I was squeezing out the hatch—I'm six feet four inches tall and weigh two hundred and forty pounds and they just don't build hatches big enough.

"Hey, you, better put out that . . ." He suddenly noticed the patch showing a skull and crossbones.

The emblem is a little melodramatic but it does shorten a lot of arguments; it shortened this one right out of existence. The lieutenant turned pale, swallowed, and didn't say a word for the rest of the trip.

The ambassador met me at the rear entrance, showed me to his office, then started the standard series of opening remarks. I looked around as the meaningless noise poured over me.

It was a nice layout. The room was big and had a plush carpet and luxurious furniture; an alcove off to one side contained a plentifully stocked liquor cabinet and an impressive TV console.

The ambassador was a political appointee, that might have something to do with the extravagant amenities.

I muffled a yawn. I hadn't been able to get any rest last night and it didn't look like I'd be getting any today; high-level plans never

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seem to allow time for low-level sleep.

The ambassador noticed the yawn and stopped talking. He had the narrow mind typical of so many politicians these days and the yawn was enough to set him off.

"Mr. Vance, I don't understand how somebody so obviously maladjusted could get into your sensitive position. I've done some checking among the people you met at the base; you show no ability to get along with people, you don't even seem to *like* people."

My psychology wasn't relevant, but if he wanted an explanation, he'd get one:

"You're right. I don't like people. I'm not a well-rounded, well-adjusted human being; I'm a weapon. And at a time and place selected by well-rounded, well-adjusted people, I kill. That's my job, and I'm very good at it."

The directness of my statement put him off balance; out of desperation he finally got to the point: "The civil authorities of the biggest city in my home state have requested assistance. It would be advisable for you to take the job."

"You know I just came in, why don't you pick another mercenary?"

"You work only at the government's request; you can hardly be called a mercenary."

Great. Not only was he a strong supporter of the social graces, he was also a blasted nit-picker on terminology.

"I fight for money, I can hardly be called anything but a mercenary."

"Well, perhaps. In any case, there was no one else available."

That meant he hadn't been able to *find* anybody else. There were no computer files, no government forms for people like me. The government doesn't like to admit we exist and, officially, we don't.

"Will you accept the job?"

That's one of the big disadvantages of my profession: in order to maintain security you're not given any details until after you've accepted a job. The other disadvantage is people like the ambassador.

"I'll take it." What the hell, if I wanted to die of old age and boredom I'd go on welfare.

I spent the next hour trying to squeeze information out of the ambassador. He said that there was a street gang that was getting a little rougher than usual: eleven murders in one month was a little over par, even in the part of town they operated in. I was to pack my white hat, fly to the specified city, and bring the ruffians to justice.

The ambassador knew a little about how I operate; I was surprised he even bothered to mention words like justice. Probably trying to salve his own conscience.

The more I heard about the job the less I liked it. Being told I'm on the side of the angels always makes me feel like a sucker; it's

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amazing how often that feeling turns out to be right.

After the ambassador finished his verbal briefing he gave me a top-secret, eyes-only, burn-after-reading summary of the situation, including short biographies of the people I was likely to meet. I read the documents, burned them and left.

The government uses people like me, professional fighters, whenever small-scale, unconventional violence is called for. I understand the practice started when the army became so tied up in red tape it could only fight large wars efficiently.

At first the government hired only foreign mercenaries; then, very unofficially, it started using people among its own citizens who would fight, and kill, for money. Mostly people who weren't adjusted to modern society, mostly criminals.

Slowly techniques were developed to tap the misanthropy that seemed to be a part of the character of most mercenaries. With special hypnotic conditioning a man could become temporarily insane and fight with the strength and ferocity of a maniac, but still remember and use his combat training.

That's the basis of the system I work for. Like most systems involving people it has its faults, the main one being that it's easy for people with connections to use it for their own purposes.

Not that it makes any difference to me. I just like to fight.

An hour after leaving the ambassador's office I was on a jet headed east. I had time to get an expensive civilian suit and a couple of rare steaks; with a few hours' sleep I'd have been in good shape. I didn't get it. By the time I was all settled in and relaxed we were in darkness, and I didn't find the red glow from the leading edges of the wings at all restful.

When I got off the plane a city cop picked me up in his ground car. As we rolled into the darkness outside the airport perimeter he punched a button on his control panel; steel plates crashed over the windows.

That was unusual. Most drivers put their shields up only when they expected to be fired on. I asked the cop if he expected trouble.

He shrugged. "There's a couple units hit by rocks every day, sometimes bullets. A friend of mine caught a slug in the shoulder last week so I'm pretty careful. Do you want the shields down?"

"No. I didn't realize it was that bad." I should have thought, the printed briefing had been detailed enough. Thirty hours without sleep never did help my thought processes. "Why do they do it?"

"Kicks." The cop seemed contemptuous rather than angry. "A guy will be standing around with time on his hands; he sees a police car, throws a rock. We don't even

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bother to pick them up unless there's a casualty, every NWC in the city has rocked a unit at one time or another."

"NWC?"

"Non-Working Citizen. It's a name they came up with themselves." He reached forward and unshielded the passenger-side periscope. "Take a look, most of the city is like this."

The 'scope had a good light-intensifier, the apartment buildings showed up almost as bright as day.

They had a superficial variety gained by stacking the modules in different sequences, but inside the apartments were all the same. From any objective description they would sound like heaven on earth: automatic appliances, built-ins up to color TV, everything.

Actually they were a subtle form of hell. The people in them did nothing, accomplished nothing. They went through the motions of living and watched TV fourteen hours a day, but that was all. They might as well have been animals in a zoo.

About half the people in the city couldn't work and therefore were bored; many of them caused trouble. Because of this, and because the law was so complex it was almost unenforceable, the police had only marginal control over the city. They kept the working population fairly safe and acted on major crimes in the NWC area, but that was all.

Everybody knew it was a dangerous, unstable situation, but nobody had been able to come up with a permanent solution. Somebody *had* come up with a solution for this particular problem: me.

The precinct station was about forty yards on a side, three stories tall, gray, and windowless. It was in the middle of a crowded NWC area, but there were no buildings near it; nothing but grass and flowers for a hundred yards on all sides.

They probably called it a park, to me it looked more like a carefully designed field of fire.

I was still thinking about that when the cop drove past armored doors and into an underground garage. He waited until the big doors closed, then said it was all right to get out.

There was a guard behind a plate of armor-glass set in the wall. He opened the door to the station interior as we walked toward it. The guard seemed wide-awake and alert, unusual for the night shift.

The offices we walked through didn't feel like part of a police station. The air of slightly corrupt bureaucracy was the same, there was the same touch of clubbiness that any behind-the-scenes outfit has, but there was an overlay of tension.

I had been in rear echelon offices when a terrorist group was in the area, they had felt the same

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way. It was obvious the situation had become much worse since the last time I'd been here.

On the elevator up to the top floor I lit a cigar. A psychologist once told me that smoking was a retreat to infantilism, with the cigar a substitute for a pacifier. I hoped he was right, because if these politicians ran true to form I was going to need one heck of a lot of pacifying.

When we got off the elevator the cop showed me to the door of the captain's office. I thanked him and walked in.

There were three people in the old, sparsely furnished room; the overflowing ash trays and the litter of disposable coffee cups showed that they had been there for several hours. I wasn't paid to be a detective, so I took my mind off the deductions.

As I met the men I matched names against information from the confidential biography forms. The man behind the battered desk was Captain Jones, an old-line cop; he had probably been the one who asked for help. He was the only other pro involved.

Jones introduced me to Polasko, a city councilman; he was an organization man, but fairly honest.

The other man in the room was in a different class entirely: Bremas, head of the NWC Party. He was ambitious, smart and dangerous. His only interest in life was power. There were indications Bremas was planning to be the next mayor; the computer gave him a forty percent chance of winning an honest election. According to the ambassador he was using the street gangs to improve the odds.

Bremas started talking as soon as he was introduced. "*Mister* Vance, exactly what are you doing here? It's true the police haven't been able to apprehend these youngsters, but that hardly explains calling in the army to help solve a strictly civilian problem. I'd hate to think what might have happened if I hadn't discovered what was being planned."

"Those *youngsters* killed eleven people last month," the captain said. "The only reason we haven't been able to nail them is we've never had an eyewitness who was willing to testify. And the reason for *that* is everybody knows you'd have those punks out in a couple of days anyway."

"That still doesn't explain the presence of an army officer. I repeat: what is he going to do?"

This was a fairly typical wrangle. Since nobody admitted our existence there was no set doctrine for getting us on a job. The locals had to work it out for themselves every time they needed one of us.

There was one good point to the argument: I had learned that Bremas' source of information wasn't perfect; he thought I was a member of the army. But I couldn't get too happy about that

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one small error, the fact of the matter was that our little secret had sprung a big fat leak and that meant I was in big trouble. Broken security is the most common route to an early grave.

The argument went on for ten minutes without getting anywhere. I finally decided to give it a subtle push by answering Bremas' original question: "Mr. Bremas, my job here is quite simple; I'm going to walk through that gang's territory until they jump me."

"But you could get killed!"

"I've had training that reduces that risk. That's why I'm taking this job instead of one of the captain's regular men." Like hell, I was taking it because that two-bit ambassador wanted to make points back home.

Bremas was starting to understand; he remained silent, presumably thinking. Polasko was lost and was trying to catch up. "Let me get this straight, you intend to invite attack on yourself and then have the police rescue you and capture the attackers."

Bremas jumped on that. "Entrapment, pure and simple. You'd never get a conviction."

"Mr. Bremas," the captain said, "I can assure you that we will be careful to act within the law at all times. We have had the district attorney look into the matter and he has assured us that there is no . . ."

I couldn't take much more of this. "I am just going to walk down the blasted street. How in hell can that be entrapment? And what do you care anyway? Does the gang have you on retainer?"

"Really, Mr. Vance." Polasko sounded shocked. "There is no reason to use that tone of voice. Mr. Bremas is entirely justified in his concern for the rights of the citizens. If we are to—"

At that point I left. They could figure things out for themselves: If I went, fine; if I didn't, fine. I just didn't care enough either way to put up with any more babbling. I sure as hell wasn't going to try to sell them on a job I didn't like much myself.

As I waited in the gray, musty lobby I couldn't help feeling there was something going on I just didn't understand. There had been a very faint, but definite smell of a double-cross in the captain's office. The captain had been a cop for a long time; he should know how to maintain security. How had Bremas known about the operation?

People who place a lot of trust in their fellow man tend to die rather young in my business, but intrigue is out of my line and with just my instincts to go on I couldn't back out, not this late in the game. I finally decided to chalk up my uneasiness to the unfamiliar area of operation.

Half an hour later I got the go-ahead; we were rolling in five minutes. I had the same cop as a

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driver, and he knew what had happened. "You took a big chance walking out like that. Those guys swing a lot of weight in this town, when they lean on you, you'd better smile and take it."

"One of the good points of my job is I *don't* have to smile and take it, not from anybody."

The cop had left the shields down. I kept track of our position as we rolled to the starting point. I didn't have to stay oriented on this assignment but it made me feel better; I would have traded this job, police support, fancy radio and all for a simple one-man locate-eliminate in the jungle.

The car came to a smooth stop. I felt the tightness that was always there before the start of the hunt. If that sidewalk had been a dirt trail I'd have kissed it.

The cop said, "What kind of gun do you want? I've got a new sonic that—"

"No guns." The people in my profession are not noted for their self-control, and a gun would offer too much temptation to end minor problems immediately and permanently.

The cop hadn't expected a negative reply. "You're out of your mind. If we don't get to you in time you've had it. On some of the guys they worked over we needed fingerprints to get an ID. Hardly enough left for the relatives to cry over."

"Just get there in a hurry when I push the button. Is the setup still working?"

The cop flipped a switch on his control panel; a map of this part of the city lit up. On it, a cross was superimposed on a green dot. I put my hand in my pocket, pushed the button on the radio; the dot blazed red.

"It's O.K."

I got out and shut the car door. "So long." The car's shields crashed up as it moved away.

I looked around, trying to get the feel of the street—it had been a long time. This was an entertainment area for one section of NWC buildings; I'd spent a lot of time in one just like it back before I was recruited.

There weren't any outward indications it was a slum. The buildings were in good shape, simple neglect couldn't damage modern polymers. It didn't have rats or garbage in the streets; biochemists had eliminated the rats and engineers had developed a foolproof disposal system.

It was the feeling of hopelessness that gave it away. The people in it had no place in modern society and they knew it. They were given everything because they could earn nothing; every welfare check was a statement that confirmed their uselessness.

Thirty or forty years ago many people were unemployed because of racial discrimination. That was no longer true, the economy just

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couldn't afford the waste of talent. The people in the NWC area were there simply because they were of no value to society—and they knew it.

The depression in the air was contagious. I shook it off and started moving. I was starting the day over again; it was just past midnight.

The pattern was familiar—it hadn't changed much since I was on the streets myself. The only people outside were the restless ones, the troublemakers, the wolves who couldn't be turned into sheep.

As I walked I watched for any sign that I had been spotted. The cop car had dropped me outside the target area, but that was no reason to relax. Besides, I was jumpy.

The streets, the buildings, the people got on my nerves. The people were telling themselves that they were cool, hip, on top of the world. But under layers of sophistication they knew that they were nothing.

Despite the government's best efforts to tell them that they were happy, they had a gut feeling, a very old, very deep instinct that a man should work for his money. Most of them smothered that feeling in televised fantasy or drowned it in cheap booze. Some of them, the wolves, got their feeling of accomplishment by killing. The kids I was after were in the latter class.

So was I.

It was a summer night. There was a feeling in the air that yesterday had been a scorcher and tomorrow would be worse. There were small groups of people every ten or twenty yards, usually in front of a bar, sometimes on a street corner.

The groups looked at me as I passed, but they weren't interested, or even curious, looks. A man would hear footsteps, his head would turn to identify the source, he would look away; it seemed that the brain wasn't involved at all.

Every few minutes a group drifted out of one of the dingy bars and another went in. That was a new one on me. I discovered the reason when I went into a bar myself; they charged both by the drink and by the minute.

I kept moving, trying to look like a tourist. My suit stood out in this crowd and I flashed a fair-sized roll in each of the bars I entered; I could only hope that my size wouldn't make the gang nervous.

I had been walking for about two hours when I picked up a tail—five, all young. They moved with a trace of discipline that was out of place on the street. The ambassador's theory about Bremas using the gangs was looking better all the time.

I kept walking as if I hadn't noticed anything. When I came to a street that was dark and empty they broke into a trot and surrounded me. They pushed me up

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against a wall; I reached for the panic button—the radio wasn't there.

I swore at myself. I should have realized that the emergency call was the weakest part of the plan and compensated for it. I just hadn't thought of the possibility of a pickpocket in the gang.

The comments of the gang members indicated that they were enjoying themselves:

"Hey, look what we got here."

"What you want, cop?"

"You ought to know better than to come into this neighborhood."

"Guess we'll have to teach him."

There was a full moon. Its light glinted off their weapons—knives, pipes, one had a sonic set on "lethal."

The gang had attacked the previous victims bare-handed, I had planned to let them use the same technique on me for the thirty seconds it would take the cops to arrive. It takes an expert to do much damage with his fists; I wasn't worried about flabby muscles guided by untaught minds.

The weapons changed the situation radically. I tried to talk them out of it. "That radio was from the cops, you know that. They're near here expecting a call; you don't have a chance."

I reached into my pocket and pulled out the wad of bills, threw it on the sidewalk. "Here, take this."

They ignored me. They had been working up to this too long, it was too close now, logic was no match for blood lust. They started to move in.

I hadn't liked it from the start, now the whole operation had gone sour. They edged closer. It started to happen; my vision fogged, I froze a second, then trembled.

"Get him!"

They attacked. The rage hit. I dodged, chopped, grabbed a pipe out of the air and threw it; the man with the sonic went down.

The others kept coming. They hadn't had time to adjust to the new situation. Normally I would have backed off, given them time to change their minds and run. But mercy is a civilized emotion and was no longer functioning.

I moved on instinct and training and they never had a chance. The man who had swung the pipe was dead before he hit the ground. The next one moved fairly well, he came from behind and nearly connected with a knife. I decked him, kicked him in the head to make sure, then wiped out the other two. The whole fight was over in twenty seconds.

The transition back to normal was rougher than usual, probably a reaction to the slaughter of essentially helpless human beings. When I recovered I forced myself to check the bodies. It wouldn't do to kill without even knowing who I killed.

I must have been more tired than I thought. Three of them were

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still alive. I found the transmitter and pushed the button, then started giving first aid.

On the ride back to the station I had a chance to think. The conclusions I reached didn't make me at all happy.

The same people were in the captain's office when I came back. Polasko looked tired, Bremas and the captain were wide awake. Night people.

"Mr. Vance! What happened?"

"They knew I was coming, who told them?"

"What do you mean?"

"They knew about the radio and they were armed. If they weren't, I could have taken it easy on them, but they didn't give me any choice. Now two are dead and the rest are in the hospital. It was you, wasn't it Bremas?"

"I resent—"

"Shut up." I took a deep breath and held onto my temper with both hands. You can't go around killing politicians just because they're crooked: before too long there wouldn't be any left.

"You needed the gang's support and wanted to keep them out of jail. You told them I was coming and explained about the radio, then you told them to get out their hardware and eliminate me. Probably figured that would discourage anybody else from going back in. Right?"

The expression on Bremas' face confirmed everything I said. He got up and walked out. Polasko seemed happy. He left right after Bremas, mumbling something about informing the mayor.

I sat down, held my head in my hands. I kept thinking of those kids. They might have deserved jail or worse, but to just slaughter them on the street . . . And they never had a chance.

Eventually I looked up at the captain. "It's a shame I can't prove anything I said about Bremas."

He smiled. "Don't worry, *we* can. We had a tap on the phone the gang uses, we got a beautiful recording of Bremas' voice. Not admissible, of course, but when the right people hear it Bremas will be out of business for a couple of years."

I just looked at him for a few seconds while everything came together in my mind. I had thought that I was ready for a double-cross from anybody, but no matter how hard you try, you can't help liking and trusting some people.

"Frame from the start, right? The mayor wanted to knock down Bremas, you told him about your trouble with the gang. You came up with a plan: set up a trap, leak the information to Bremas, get the gang and Bremas at the same time. The mayor called his friend the ambassador to get some bait and here I am, doing everybody's dirty work."

I looked at him speculatively.

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"But why did you call in a mercenary? You expected the bait to die, didn't you? And you didn't want to set up one of your own men."

The captain didn't bother to deny what I said, didn't even seem upset by it. "We have to keep the city together any way we can. You saw how bad it's getting out there."

He leaned back in his chair, secure in his bureaucratic niche, not a worry in the world. "By the way, how *did* you survive?"

The jungle was starting to look positively inviting; a nice, honest cobra would be a refreshing change of pace from people.

"I've been trained to go into a state of temporary nonsanity when necessary. When I am in that state all normal thoughts, all emotions are blocked. I kill until I run out of targets."

The captain had stopped smiling. He was reaching for a call button.

"Don't worry, the state of rage is keyed to the survival instinct, just being mad isn't enough."

The captain said, "You'd better leave."

"Just one more thing. One of those kids has a fractured skull. If he lives, have him call this number." I handed him a card.

The captain looked at it. It contained a phone number, nothing else. He looked up at me.

"You want to recruit him? Scum like that?"

"Not scum, just somebody who doesn't fit in as he is and is too tough to be bent. He showed real talent on the street, I'd like to put it to use."

"Is this one of the standard ways you have of getting recruits?"

"It's the only way."

The captain started to ask something, then looked at me closely. The plastic surgeons had done a good job and the old mug shots weren't much good anyway. He showed no sign of recognition.

He thought for a few seconds, tapping the card on his desk, then said, "I don't think that I can in good conscience further that practice."

He started to put the card down the waste chute. I had the card in one hand and his neck in the other before he knew what was happening.

The anger rose in me; I let it take control and pounded the words at him. "You need us, Captain, you don't like to admit it, but you need us. You can't do the job within the rules, you haven't got the guts to break the rules, so you need us. Nobody likes us, you don't even admit that we exist, but when things get tight and the rules don't work, you need us."

I let go of his neck, gently laid the card on his desk, and walked out the door.

An hour later I was on a jet flying away from the city. Away from civilization. Back to my own territory.

Back to the jungle. ■

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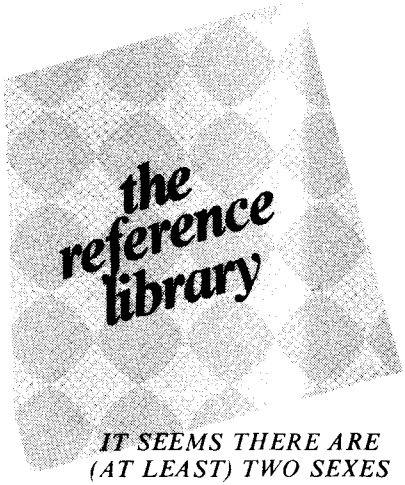

P. Schuyler Miller

IT SEEMS THERE ARE (AT LEAST) TWO SEXES

The wheelchair brigade among Analog's readers may remember the shocked incredulity with which they laid down the Winter 1931 issue of *Wonder Stories Quarterly,* or took care to hide it from Mother. The book-length story featured in the magazine was "The Scarlet Planet" by someone named (or pseudonamed) Don M. Lemon. For the first time in science fiction, a writer suggested that noble space-rovers were not dedicated to monsters, treasure, scientific secrets, fighting, and bizarre scenery alone. They went ape over women. Over s-x!

Twenty-one years later, with the August 1952 issue of *Startling Stories,* faithful readers had another shock. In Philip José Farmer's "The Lovers," the heroine was some kind of insect. (Well, O.K.—Dejah Thoris laid eggs. But that didn't make her a hen!)

Farmer didn't stop with "The Lovers"—in fact, he hasn't stopped yet, and isn't likely to. In those days he experimented with sexual themes more subtly and imaginatively than in some of his recent books. The snowball has been growing into an avalanche and now we have two anthologies of good science fiction about sex. In "Strange Bedfellows" (Random House: 273 pages, $5.95), Thomas Scortia has gleaned nineteen previously published stories about the sexual relations of men and other creatures. Joseph Elder, on the other hand, has assembled ten new stories, mainly about men and pseudomen, in "Eros in Orbit" (Trident Press: about 221 pages, judging from the proofs; $6.95).

Scortia didn't restrict himself to stories about human (or humanoid) sex, as Elder did. He consequently has such a classic as Farmer's "Mother," which made intelligent use of psychology at a time (1953) before most SF readers realized psychology might be a kind of science. A mother's boy literally returns to the womb for refuge from a hostile world—and from Mom. Mel Gilden's "What About Us Grils?" describes the crisis when a grundy and a furble and a tibbit and a gril have to get together—and can't. R. Bretnor's "Dr. Birdmouse" complicates things even more on the planet Eetwee, where one Dr. Gibbon created some unbelievable genetic "arrangements." George Zebrowski's "First Love, First Fear" is a gentle story about a human boy's discovery of sex among the humanoid sea people of his alien world, and in Laurence Yep's "Looking-Glass Sea" an adult spaceman sealed in his suit encounters another sea-nymph. As for Miriam Allen de Ford's "Daughter of the Tree," I suppose that pasto-

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ral myth has to be fantasy, because the title is literal.

I suppose another of the top stories in Scortia's book, "The World Well Lost" by Theodore Sturgeon, belongs with the aliens in a sense (two lovers escaped from a tremendously powerful planet Out There are to be dragged back), except that it is really about human relations.

As you might expect, androids are all over both books. (If you can't make a girl, you can have one made to your order.) Scortia's own "Icebox Blonde" is on sale in a case in the supermarket. Gerald Alper's "The Mechanical Sweetheart" is a rather old-fashioned and ironic "twist" story about a man in love with his robot. And in "Eros in Orbit" we have one of Ron Goulart's farces about a Connecticut artist of 1991 who finds himself host to a typical Goulartian android fornicating machine, "liberated" from Famous Doctors' sex clinic. It's called "Whistler." We have Scortia again with "Flowering Narcissus," about the last man in an android world. And we have Gordon Eklund's "Lovemaker," with android actors and actresses recording sex programs for a network that broadcasts emotions. Oddly, Robert Silverberg has used this same gimmick of broadcast emotions for "In the Group," about the tensions which occur when one member of a group-sex circuit develops "atavistic possessiveness" about one of his partners. But the stories are totally different: gimmicks don't make stories any more.

On the android/human borderline, George Zebrowski's "Starcrossed" in the Elder book tells how the electronic dallying of a he/she brain screws up a starship's mission.

Clones are also "in" these days. Scortia works them into "Flowering Narcissus," as the solicitous androids find a way to give the man from the past companionship. However, Pamela Sargent's "Clone Sister" is by far the best story in the Elder anthology and one of the best in both books. It is an episode in a series exploring the psychological problems of the Swenson clone, three men and a girl grown from a clump of their distinguished father's cells. Jim Swenson finds the ties that bind him to his clonemates stronger than those to an "outside" girl. I think these stories will end as parts of an excellent novel.

The rest are stories about human sex—"normal" sex in an abnormal society, abnormal sex in a "normal" society, and permutations of the two. Back in "Strange Bedfellows," Robert Silverberg's excellent "Push No More" is the story of Harry Blaufeld, the fifteen-year-old boy poltergeist who uses his psychokinetic powers to make out with a girl—with traditional results. (If you're thinking of the right tradition.) Joe Gores' "The Criminal" gives us a mutant who finds a way to perpetuate his superior genes in a genetically controlled society dedicated to preserving the norm and stamping out deviants. Jack M. Dann's "I'm With You in Rockland" gives us mechanically augmented sex—with

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a penalty—and so does Edward Bryant's "2.46593," in "Eros in Orbit." Richard McCloud's "The Widening Circle" tells what happens when an actual oriental sexual hangup called *Koro* spreads to the West, and the late Anthony Boucher deftly expands a grand old limerick into "Khartoum" (both in the Scortia book).

Perhaps the subtlest of the lot is Brian Aldiss' "Lambeth Blossom" in "Bedfellows." He constructs the sexual customs of a future England absorbed by the Glorious Universal Republic descended from Chairman Mao's and enveloping all the world except a recalcitrant Africa. This is also one of the best in the two books. To finish off the reprints, Chelsea Quinn Yarbro's "False Dawn" is one of a series about a girl in the world after the collapse of our society. When they are all woven together, the whole will be better than this part. William Carlson's "Dinner at Helen's" plays around with the androgynous unisex being of the Hermetic alchemists. Walt Leibscher's "Do Androids Dream of Electric Love" is another man/android story that I should have listed above, and Harvey L. Bilker's "Genetic Faux Pas" gives us a new generation of seemingly sexless mutants—but Old Ma Nature isn't going to make it impossible to propagate her new race.

We can close with three stories from "Eros in Orbit," all new. Jon Stopa's "Kiddy Lib" is a far-out farce about the Dirty Old Men's revolution against Teddi Bear and the kiddies. Barry Malzburg's "Ups and Downs" suggests a technique for taking care of the sexual needs of long-distance astronauts. And Thomas Brand, in a something called "Don Slow and His Electric Girl Getter," parodies Tom Swift, old-line science fiction, and everything else in sight in a verbal comic book.

We've had other SF anthologies "about" some apparently limiting theme or subject. Science fiction has demonstrated again and again that you can't limit it—that it can rise above any restriction. These two books demonstrate that it's also true when the subject is sex.

THE MAN WHO FOLDED HIMSELF

by David Gerrold • Random House, New York • 1973 • 148 pp. • $4.95

Some of you have read Robert A. Heinlein's "All You Zombies." I suppose you thought he had done things to the time travel story from which it would never really recover. I thought so, too . . .

David Gerrold has taken what is essentially the same formula and developed it in ways you couldn't imagine. He has explored all the paradoxes—and made clear why there are no paradoxes. He has converted the diverging probability streams into a braided network of macramé. And, since he is writing New SF instead of Old SF, he has painted the portrait of Dan/Don/Dean/Dino (Dion/Dana/Diane/Donna . . . and on, and on) in more dimensions than you can imagine.

Danny Eakins is a nineteen-year-old whose Uncle Jim has been providing him with a thousand-dollar-

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a-week allowance. His uncle dies, leaving him no fortune—just a timebelt. He decides to jump a day ahead (this is 1975), pick up a newspaper with the race results, then go back again and build up his little nest egg into a fortune. But Don, who is Dan-tomorrow, stops him and organizes the project a little better. After all, he knows what is going to happen, doesn't he? But Danny experiments . . .

For you old Analog hands who insist on "hard" science fiction, there are two and a half pages of entries from the timebelt instructions—just headings, like "Alternity," "Discoursing," "Tangling and Excising," "Reluctances," "Avoidances and Responsibilities," "Timeskimming," "Timestop" . . .

For you New Wavers who want relevance in your SF, what can be more relevant than time-based homosexuality, yourself with yourself, as the ultimate in Portnoyish narcissism? On the other hand, in alternate timestreams Danny is sometimes Diane. And what price Identity, the magic word of Now, when you can have a perpetual poker game with yourself—with several of your selves. Which is really you? (David Gerrold answers that one, and it erases some of the axioms of time travel.)

I started to draw a diagram to keep track of the folds in Dan/Don's self-line. I got lost. But something a little bothersome has been happening.

I first picked up the book in a local bookstore. A couple of weeks later, along came a review copy . . . then another . . . then another. Is the Random House computer interfaced with a timebelt?

THE PECULIAR EXPLOITS OF BRIGADIER FFELLOWES

by Sterling Lanier • Walker and Co., New York • 1972 • 159 pp. • $5.95

From the Odyssey to Sindbad to Mr. Joseph Jorkens to the more recently told tales from Gavagan's Bar in New York and the White Hart in London, tall tales well told have been the basic bones and blood of fiction. I've missed them, and I missed this collection for too long. Don't let it happen to you.

These are tales told to his friends in a New York club by a retired English artilleryman, Brigadier Ffellowes—a man cast in the mold of which Rider Haggard and Kipling and Talbot Mundy wrote, who lived in the days they knew and experienced things nobody else has seen. He has discovered the connection between the Nandi Bear of African legend and the gods of ancient Egypt. He has been hunted along the Arabian coast by the lizard-headed creatures whose figures the Sumerians modeled in clay at Ur and Eridu. He knows what beings the old Norse found in their fjords, and who the Basques are, and what strange turns fundamentalism can take on a Caribbean island. And he has also encountered what most of us would consider the supernatural—on a Greek isle, dominated by strange women, and in the foothills of the Blue Ridge, not far from wartime Washington.

They are grand tales, every one. There are only seven, published in *Fantasy and Science Fiction* from

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1968 to 1970. I hope there will be more, and soon!

AND NOW WALK GENTLY THROUGH THE FIRE . . .
edited by Roger Elwood • Chilton Book Co., Philadelphia • 1973 • 185 pp. • $6.95

I know next to nothing about Roger Elwood, except that he seems to be the busiest editor of science fiction and fantasy anthologies anywhere. I've missed some of his earlier ones, and with this as a sample, I'll watch for the paperback editions.

The title story, by R. A. Lafferty, is as usual unclassifiable. Perhaps it will help to quote a little, to show you what the story is about. It takes place on the high plains of the West, thirty years after the Day of the Great Copout, the Day of Freedom, after which nobody would ever have to work again. "The people were very heroic in their refusal to work, and many of them starved for it . . . Officials and paper shufflers ceased to officiate and to shuffle papers. Retailers closed up and retailed no more . . . The clock of the people stopped." Except, that is, for a few of the mavericks: the Witnesses, the Maccabees, and the Ichthyans, the Queer Fish, who drive their wobble-eyed cattle, who fight the Devil and mankind, and who await the Second Coming of the Earth Mother's Son. "New" SF? I suppose so. But it communicates.

You'll find some more conventional science fiction here, and very good stuff too. Joan Holly's "Gift of Nothing" is especially timely, with its Indian ethnologist who must help men do to the natives of another planet the things that were done to his own people. Rachel Cosgrove Payes' ". . . And the Power . . ." shows us an attempt to measure and harness the healing power of a true miracle-worker. Robert Silverberg's "Caught in the Organ Draft" extrapolates a little to the time when the young must furnish their lungs, their kidneys, their surplus organs to perpetuate the worthy old. Philip José Farmer, in "Mother Earth Wants You," describes an abortive revolt against the Earth Mother that Lib has resurrected from the myths of the White Goddess.

Clones are very much with us these days. Pamela Sargent's "A Sense of Difference" is another and earlier episode in the chronicle of the Paul Swenson clone whom we also meet in "Clone Sister," in the Joseph Elder anthology of sex in SF, "Eros in Orbit." In Robert Bloch's "Forever and Amen," on the other hand, a Howard Hughes tycoon immortalizes himself via cloning in a yarn of purely Blochian black humor.

Ted White's "Stella" is a biological story of another kind, an account of a larval "child." Barry Malzberg's "Making it Through" is a collection of ludicrously crystallized SF clichés (he has another sample in "Nova 2"). I only hope that new, young readers will realize that they are clichés and that we know it. Finally, as "K. M. O'Donnell," Malzberg probes the mind of a tormented nobody obsessed with the Second Coming, in

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"Chronicle of a Comer." Then go back and read about the Queer Fish again.

DARKENING ISLAND

by Christopher Priest • Harper & Row, New York • 1972 • 147 pp. • $4.95

England, the newsreports tell us, has been experiencing some of the supposedly patented American racism. Presumably this novel by an English writer is a spinoff from the growing resistance to immigration by nonwhites. I do not mean to suggest that Mr. Priest is expressing his own attitudes; he is extrapolating what he sees around him, as American writers have done again and again.

His book is in the Wellsian tradition of the unimportant protagonist caught up in catastrophe. This is a future in which the emerging African nations, egged on and assisted by major powers which are obligingly never named, batter each other into radioactive sherds. It is evidently the Spanish Civil War all over again (or do you prefer Vietnam?)—a proving ground for weapons and techniques. That could be story enough, but it isn't this one.

Refugees from the ruins of Africa—Afrims—have fled to the rest of the world. They come ashore in England, starved, sick, penniless. England has elected an openly racist government, and welcomes them with guns and clubs. Soon the rapidly "darkening" island nation is a shambles of factions. There is the Tregarth government with its troops. There is an opposition, on the surface dedicated to "decent" treatment for the Afrims, but quite possibly dedicated only to being an Opposition. There are the Afrims, aided by Russian arms and funds, moving into suburban and urban homes, taking what is not given to them, building into a guerrilla army. There are assorted white guerrilla bands—gangs of looters—little enclaves who somehow manage to let all the turmoil pass over them. And there are the white refugees nobody wants and nobody trusts (since they haven't chosen sides), driven out of their homes, foraging for food, herded into concentration camps, prey to the rest.

Alan Whitman is one such drifter. He is a former college teacher, out of work since the colleges were closed, making do with pickup jobs while he drifts steadily further from his wife and (he keeps telling himself) closer to his young daughter. Afrims drive them out of their London home, and they decide to take refuge with Isobel Whitman's parents in Bristol. They never make it.

Because Christopher Priest is not H. G. Wells, he uses the nonlinear techniques of the New Writers, and does it effectively. He cuts back and forth in time and place—Whitman now—Whitman as a boy initiated into sex—Whitman in a band of rovers—Whitman hunting his lost wife and daughter—Whitman courting and cheating and remembering. It adds up, I suppose, to a many-faceted portrait of Whitman rather than to the usual adventures of a protagonist who could just as well be anybody. Old English brew in a newish bottle, but quite palatable.

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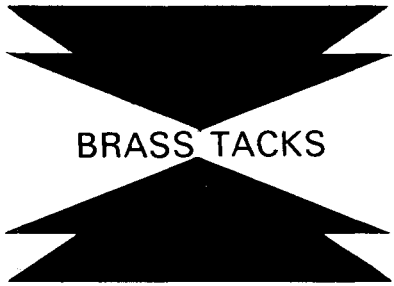

A LETTER FROM THE EDITOR
Dear Analog Readers:

Science-fiction readers are a very diverse and outspoken group, especially when it comes to politics, religion, sex, technology, ideology, socialism, communism, capitalism, individualism, literary criticism. . . the list could go on and on. There may be a few issues on which we could all agree long enough to form a pressure group, society of concerned citizens, or fan club, but not many.

In fact, you've been so outspoken on such a multitude of topics of late that we've accumulated enough material to fill an entire issue of Analog with Brass Tacks alone. Thus, we've tried to divide your letters into groups according to the concerns expressed therein and present the salient features of same without retort, in order to air as many of your views as possible.

Those of you who wish to express your chagrin over this deviation from the usual procedure, address your comments to Brass Tacks, Analog, The Condé Nast Publications, Inc., 420 Lexington Avenue, New York, N.Y. 10017.

We'll try to get them in.

THE EDITOR

Some of you think we're sexist . . .

Dear Mr. Bova:

As a homosexual greatly interested in the future and what life could be, I am disappointed in your equating homosexuality with the violent *crimes* of rape and pillage, in the December issue of Analog (Brass Tacks) . . .

I ask you to think about your prejudice and to consider an editorial policy repudiating such slurs against others with different lifestyles and values who choose to respond and express love differently from you, thereby more closely aligning your editorial policy with the content and goals of Analog.

PETER FREDRIC STEINBERG
160 East 48th Street
New York City 10017

Dear Mr. Bova:

Sex, or the treatment of sex, in stories such as "Hero" and "The Gold at the Starbow's End" didn't bother me.

What bothers me is the noticeable undercurrent of male chauvinism in some stories I have read (not necessarily the same ones mentioned) . . .

KIM WAINWRIGHT
6349 Leslie Drive
Brook Park, Ohio 44142

Dear Mr. Bova:

. . . R. G. Cleveland's curious statement that Barbarian women "seek, and enjoy, being dominated by a man" is an anomaly (guest editorial, February 1973 issue). If Cleveland's Barbarian women do not *seek* true domination, and only appear to be dominated by their

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mates through their own voluntary respect—how is it that this syndrome does not work in reverse, for the males? Is not a Barbarian man to be expected to seek a woman who is a leader-hero? . . . There is some very screwy sexism going on here . . .

MIKE DUNN
2203 E. Miller Street
Seattle, Washington 98112

At least one of you thinks we're racist . . .

Dear Sir:

I strongly protest the story, "A Thing of Beauty" by Norman Spinrad, appearing in the January 1973 issue. The derogatory use of the term "Jap" is infuriating in itself, while the story merely rehashes racial stereotypes I have never seen in Analog in the eight years that I have read it . . . I would have hoped that such racial prejudice was on its way out in America.

Mr. Spinrad's "Thing of Beauty" has no redeeming aspects and I consider it obscene.

JEFFREY Y. SUE
10 Coleman Place, Apt. 3
Menlo Park, California 94025

And some of you suspect us of militarism . . .

Dear Mr. Bova:

Regarding your reply to David Conrad in the March issue's Brass Tacks section, I wonder how you justify your claim that an effective ABM system is a life-and-death matter to the entire world, especially since no proposed or envisioned ABM system would significantly lower the killing long-term radiation levels resulting from any sort of nuclear warfare. Of course the ABM concept is important to heads of state, but this, as all else, is for political and military reasons, rather than because of any protection an ABM system might give John S. (for Sucker) Taxpayer, which is *none* anyway . . .

I wonder if you read past the first sentence of our letters at all; if you do, I have a statement . . . that I hope you read carefully, Mr. Bova: Virtually everything military *is* Evil, communism, capitalism, and Buddhism notwithstanding, and if you really believe otherwise, you're kidding yourself.

DAVID TIPLER
360 West 9th St.
San Bernardino, California 92401

. . . or of economic naïveté . . .

Dear Mr. Bova:

I was rather disappointed in your answer to Reader Gordon in the April issue (Brass Tacks). Surely you don't measure industrial progress by size and number of missiles and rockets? Armaments do not respond, as a rule, to market pressure; they're produced on government order and have little or no relation to the overall industrial level of a nation. Sure, the Russians have plenty of big warheads and such, but try getting a comfortable pair of shoes over there! And their GNP is naturally growing faster than ours . . . just as a five-year-old grows faster than a twenty-year-old . . .

DR. F. PAUL WILSON
Box 661
Normandy Beach, New Jersey 08739

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. . . or of peddling propaganda!
Dear Mr. Bova:

. . . In the March 1973 issue I was impressed with your editorial honesty in printing such a vast majority of letters from readers who disagree with your ideological bent. I noted well your remark that stories are published because they are good science fiction and not because of their political slant. And then I read the cover story, "Who Steals My Purse."

That story is undeserving to be called science fiction; blatant propaganda would be closer to home. It was so transparent . . . and so painfully biased that I found myself racing to the end so that I could finally throw the whole magazine across the room. It was obvious from the first page that the President, despite uninformed opposition, was going to do something good for the Orientals rather than something bad. And then we were expected to conclude that, after all, "Daddy knows best." Such drivel is an insult to your readers' intelligence . . .

DENIS UNKE
Route 4, Box 201
Alexandria, Minnesota 56308

Then there's a charge of political oversimplification . . .
Dear Mr. Bova:

I want to call attention to what I feel is the simplistic handling of politics in many SF stories. The author uses the devices of SF merely to expound his political views. He places characters of the opposite philosophy in a situation specifically designed to play on their assumed inflexibility, and make them look foolish.

"Request for Proposal" (November 1972) for example, ridicules bureaucracies (something often worthy of ridicule) by depicting one in the midst of mismanaging an urban renewal project. They investigate, and then approve, a novel method of clearing land: low-yield nuclear devices!

It is a political satire no doubt, but is it science fiction? If it *is* then there is some darn good SF being published in underground newspapers all over the country!

The thing I find most disturbing about this kind of story is that no intelligence is assumed in the opposition. None at all.

Or take "Generation Gaps" in the September 1972 issue. The political structures of the world are manned by (stereotyped) hedonistic drug-culture free-lovin' flower children. As a result, society has degenerated into a morass, with killer gangs and cannibalism on the upswing. Meanwhile, all the "straight" people are fleeing to the Moon. That is basically the story.

No useful intelligence has been endowed on the hippy-politicians, or anyone else, except one or two of the straights. If you follow that assumption, then the story may seem plausible, but I would say that the author stacked the deck to "prove" a point.

In "The Long Silence" (March 1972) a neo-hippy culture called "lamies" come in for their lumps. The lamies constantly surround themselves with loud, blaring noise, music, or what have you. They

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never turn it down, and never turn it off. The reason, we discover at the end, is "without noise they have to think. If they are forced to think for too long, they go mad."

Again, to what lengths did the author have to go to distort and caricature humanity to "prove" his point?

In the September 1972 issue, a story called "Ideological Defeat." The Russians won a nuclear exchange with the U.S., and then stashed away all the conventional armor and aircraft they could, for future use.

So now they are battling for control of North America against a few pockets of native resistance. The Americans only have rifles and a few cannon, while the Russians make use of their large (but dwindling) supplies of advanced weaponry. Through overconfidence and overdependence on their technology the Russians find themselves outclassed (like Vietnam, only in reverse, right?). Their ideologies lose with them, of course, and are a major reason for their defeat . . . at least that is what the author would have us believe. Supposedly the Americans in Russian-held territory rebelled, destroying the Russian foothold, because they were sick of being force-fed Russian ideology. More plausible would be that they saw a chance to rid themselves of rule-from-without . . .

Science fiction can, and has, made good use of politics when intelligence and insight were employed. Keith Laumer's "Retief" stories are inspired political satire, as well as refreshing SF. Laumer can lampoon almost anybody with great skill, but he does so by having his characters act in all-too-believable manners. Though the situations and dialogue are often comical, his characters are deadly serious from their own viewpoint, and they are far from brainless . . .

The "Telzey" stories by James Schmitz also use politics . . . strange, intriguing galactic politics. True, they are but a backdrop to the basic "psi" aspects of his yarns, but the politics are intelligently and imaginatively handled . . .

"The Tactics of Mistake," a serial published a while ago in Analog, is an excellent example of politically-oriented SF. Some very original thoughts on political and military strategy form the core of this story. No analogies or sly references to current events are made, and without these crutches the story develops a very full and unusual theme . . .

Science fiction, I feel, should be open to original, intelligent and unusual thought on any topic imaginable. But the ax-grinding and the preaching we can do without.

ED BIANCHI
4019 Redden Road
Drexel Hill, Pennsylvania 19026

Some of you thought that R. G. Cleveland, in February's guest editorial, was "right on" . . .

Dear Mr. Bova:

I enjoyed Mr. Cleveland's guest editorial . . . and hope we will see many more editorials by him. Regarding his ideas about Para-barbarians, I would like to offer a few thoughts.

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There seems to be a repeated swing between the leftist and rightist philosophy involved here. Between the inner-directed and the outer-directed person—the individualist and the conformist.

I would like to suggest two additions to the series, one at each end, making it:

Inner-directed	Outer-directed
A) Savage—loyal to self and family	
	B) Tribesman—loyal to tribe
C) Barbarian—loyal to self, disdains tribe	
	D) Citizen—loyal to country
E) Parabarb—loyal to self, and to country when in his interest	
	F) World Citizen—loyal to mankind in general

Hopefully we will reach the last category before it is too late—then people in general will be willing to turn the United Nations into an *effective* world government . . .

ELLEN K. CROUCH
1810 Olmstead Drive
Falls Church, Virginia 22043

Some of you agreed, with qualifications . . .

Dear Mr. Bova:

Thanks for printing Mr. Cleveland's editorial. It helped me to see what I am—a Parabarbarian. There are few like me, and until now I couldn't make myself fit any published description. Now I know.

Campus rebels include few Parabarbarians, however. They are desperate Tribesmen trying to create islands of constancy in a world that is changing too fast for their taste. Their uniformity of dress and personal appearance, preoccupation with balanced ecology, antagonism to science and technology, and communal way of living vividly display their Tribesmen traits . . .

There may be enough Parabarbarians around to save the United States from stagnation, but very few of them are the visible rebels. A true Parabarbarian is smart enough to work behind the scenes if he possibly can.

ANDREJS BAIDINS
1104 Windon Drive
Wilmington, Delaware 19803

Dear Mr. Bova:

An editorial like "Beyond the Citizen" leads the reader inevitably to self-examination as part of the process of verification (or non-verification) of the writer's thesis. Giving full weight to the human tendency to see oneself in the most-approved terms—in this case, as a Parabarb—still, I seem to fit there better than elsewhere.

But I believe Mr. Cleveland oversimplifies human nature for the sake of clarity. His stages represent quantifiable qualities which can coexist within any individual in different strengths in different relationships and circumstances. Most of us are occasional Tribesmen—the value of

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routine busy-work in times of emotional and spiritual fatigue is well-known . . . Within my marriage (I am a widow) I was a Citizen . . . Still, within government, church, job, motherhood—I am a Neobarb . . . Also, I know "long-hairs" who belong in each culture—though they conform to or serve a different structure; and straights of all ages who are Parabarbs. Don't confuse culture-level with generation or style!

MARY KAY BOND
447 Sandalwood
San Antonio, Texas 78216

And some of you simply thought he was off . . .

Dear Mr. Bova:

I protest against the February issue guest editorial's implication that campus radicals, hippies, and similar "underground" elements are exponents of individual rights. Such people commit acts which are incompatible with adherence to the principle of individual rights: the initiation of physical force in demonstrations, the introduction of physical force onto college campuses, the wanton destruction of private property, the expression of sympathy with Communist regimes, and the advocacy of an acceleration of our society's present trends of persecuting a certain minority group (businessmen) and expanding statism in economic matters . . . As a further brief comment, I agree that individualism is undervalued and insufficiently practiced in our culture, but I disagree with the editorial's use of degree of individualism . . . as a fundamental criterion for classifying and evaluating approaches to life . . . I also disagree with the notion of genetically-determined personality types.

One minor point: the alleged Hitler quote is a phony . . .

DOUGLASS B. MORRIS
Evermann Apts., #659
Bloomington, Indiana 47401

Dear Sir:

. . . I was somewhat surprised and not a little puzzled upon reading the guest editorial in the February issue. Frankly, I cannot, through any stretch of the imagination, envision John Campbell accepting the basic idea set forth in R. G. Cleveland's opus: that a new, superior sort of person is at large in the world today—the Parabarb—and that the left-wing revolutionary is he. "Beyond the Citizen" does fulfill the Campbellite idea that an editorial should make the reader think, but the question that I think of is: How did this nonsense get into the pages of Analog? A second question: How does Mr. Cleveland expect to get away with this bald-faced attempt to fit victims of Campbellite criticism into the Campbellite political universe? My only theory to date is that Mr. Cleveland has also noticed the SF-Conservative commonality and, inclining to the left himself, he hopes to forestall an alliance by invoking . . . pseudo-Campbellite terms, to proclaim the revolutionary or hippy as the man of the future . . .

Personally, I would like to think that Mr. Cleveland's hypothetical Parabarb existed: ignoring a few contradictions of definition, the Parabarb sounds like a fine fellow,

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rejecting the bad aspects of a culture and accepting the good ones . . . Indeed, I am motivated to accept the Parabarb if only because I think that I fit into the category.

But, the Parabarb does *not* exist. Moreover, under Mr. Cleveland's definition no such animal can exist because the definition is self-contradictory. The Parabarb is defined as having "social responsibility minus cultural loyalty." But further on Mr. Cleveland characterizes the Parabarb as one feeling no moral responsibility to defend the culture and as one who will willingly take advantage of the system; in other words, a parasite. A parasite is obviously without social responsibility since he benefits from the culture without contributing to it . . .

Even if the frabjous creature, the Parabarb, did exist, he would *not* be the hippy or left-wing revolutionary of 1973. Mr. Cleveland's Parabarb views a culture as a "social machine" and, when it goes astray, will destroy and replace only those parts which err. A far cry from the "Destroy Everything" whoops of the modern revolutionary . . . Nor are modern revolutionaries very much for producing new ideas. Any notions proclaimed by advocates of "the Revolution" betray vast ignorance of practically everything as well as being so vague as to be meaningless. Rather unlike Cleveland's Parabarb who sees a need and corrects it as necessary . . . If any further proof is needed, Mr. Cleveland states that a Parabarb culture could never become totalitarian. This alone demonstrates that modern revolutionaries are non-Parabarbs since they demand total allegiance to their goals in *all* areas of concern . . .

If this were not enough, Mr. Cleveland also adds a few errors in his case material. For instance, he describes the Citizen as being loyal to his culture, but he confuses culture and country. A culture is not a country. The Boston socialite and the Southern poor white share a country, but are their cultural matrices the same? Obviously not. Moreover, Mr. Cleveland adduces false evidence. The famous "Hitler quote" is in a category with the famous three-dollar bill. Conservative scholars, whose views were being slandered by association, tried to track it down. It appears in no collection of Hitler's speeches, none of his recordings and none of his historic material. The man who introduced it into the present "couldn't remember" from where he obtained it . . . He was an anti-law-and-order political liberal.

Like this fellow, I believe that Mr. Cleveland has invoked a famous figure to advance his case in a situation where logic fails him. Mr. Cleveland is trying to garner a little "gilt by association" (pun intended) . . . I hope that such cheapening efforts do not appear in Analog again. There is enough nonsense (non-sense) in other magazines without finding it in Analog.

LEE STRONG
Pfeiffer College
Misenheimer, North Carolina 28109

Dear Mr. Bova:

Your innovation of having guest

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editorials is commendable, but I hope future guest editorials are carried off more successfully than R. G. Cleveland's "Beyond the Citizen," in the February 1973 issue.

The Hitler "law-and-order" quotation cited by Cleveland is spurious. As reported in *National Review,* April 21, 1970, page 411, the Library of Congress was unable to trace it to any of Hitler's recorded speeches or writings. None of the Hitler specialists then contacted could place the quotation. From internal evidence it seems unlikely that Hitler would have said it: the disorder in the streets mentioned was primarily a result of *Nazi* activity!

Cleveland's distinction between Barbarian and Neobarb (or Parabarb) is interesting but misleading. If by "Neobarb" Cleveland means an individual whose appearance is more "Barbarian" than "Citizen," but who prefers to reform an unsatisfactory society rather than to destroy it, the "Neobarb" is hardly new. Many of the Germans who overran the Western Roman Empire matched this description. Theodoric's Goths, for example, did not want to destroy Rome's society. They only wanted to adapt it to serve their purposes. Why kill the goose that laid the golden eggs? Theodoric tried to maintain most of the Roman system under new leadership, with Roman law side by side with German customs. The religion of the conquered was tolerated. The army was manned by Germans, but the imperial civil service was maintained and manned by Italians. Most of Roman society impressed the Goths sufficiently to be left basically intact.

Society's problem in Theodoric's time lay not with rough masters, but with the internal condition of society. The Roman society was "sick" before the Goths could conquer it. Even though Citizens such as Boethius and Cassiodorus cooperated with the conquerors in an attempt to preserve Rome's society, they failed . . . Perhaps I'm an overly pessimistic Citizen, but the probability that Neobarbs can revive a society whose Citizens cannot strikes me as very low.

BARRY E. BROWN
R.D. #3
Bedford, Pennsylvania 15522

Dear Mr. Bova:

Mr. Cleveland's editorial in the February issue has set me to thinking—which is the best compliment I can pay it—but I find myself disagreeing with a great deal of it. The most important point is that our society, like all others, is based on the division of labor, which gives us all much more than we could have if we lived in a truly independent manner. Social structures and government both began in the arid but fertile Nile and Euphrates valleys, out of the sheer necessity of regulating irrigation, and were so outstandingly successful that they easily outdistanced any other arrangement of our lives, with the result that we are now highly interdependent in a structure which grows more complicated by the hour, and forces us all to be Citizens, so far as the most important matters are concerned, whether

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we like it or not. Any other sort of behavior will upset too many other people's essential interests. Though we need individual initiative to solve new problems, it must be a balanced and considered initiative which takes into full account the needs of the rest of us. Free societies exist and prosper, not just because we are free, but because we are conditioned to choose voluntarily to do "what is right" when the choice is presented to us. Whenever a great many of us start doing otherwise, the whole structure is in danger, and that is what I fear is happening now . . .

We seem to be separating now into the three standard elements of a collapsing society: a ruling minority which is fighting a rearguard action trying to hold it together; an internal proletariat, living in it but feeling no obligations to it; and an external proletariat hammering at the walls. The hippies Cleveland is praising may well be compared with the early Christians, and I mean this as no compliment to either, for I agree with Gibbon that Christianity was one of the important causes of Rome's fall. They began in a part of the Empire far away from where the decisions were made, among a people who had not had to make their own and suffer the consequences of them from the time of Pompeius Magnus, and they sat safe behind the line of legions and sneered, "What do we owe Rome and its wicked rulers? It is God who protects us, and he simply uses them as tools." And it was mostly the good emperors, not the bad ones, who persecuted them. The final test of their thesis came after Constantine's Christian Rome did no better than pagan Rome had, and so Theodosius made paganism illegal. He was the last emperor of a united Rome. So I say we do not need people whose consciences force them to choose what duties they will perform as Citizens; they are too much akin to the anchorites who fled to the desert to save their souls. We will need better Citizens, not worse ones, to keep the machine functioning, and they must remember one thing which used to be said where I grew up, "If you like to eat meat, don't get mad when you are asked to help butcher."

. . . I'm an old man who can remember being a small boy on a small farm before Woodrow Wilson took us into the War to end War, and sometimes I am rather glad I shall not live to see the Final Answer to our current difficulties.

JOSEPH M. WILSON
507 North Oak Street
Normal, Illinois 61761

After all is said and done about R. G. Cleveland, there are those of you who want us to know there IS science in science fiction!

Dear Mr. Bova:

For ten years I have been working on detectors to sense the very weak strains in space that would be caused by gravitational radiation from massive, dense objects such as neutron stars and Black Holes. Recently I was looking into the possible relativistic effects that might

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exist very close to a Black Hole, and suddenly realized that the gravitational radiation that will cause very small, almost impossible to measure, strains in our apparatus here on Earth at 3,000 light-years or so from the Black Hole, would cause very large, even dangerous, strains at 3,000 kilometers distance. Depending upon the assumptions as to the strength of the source and the frequency, the strains could be as high as 10 G's per meter (10 G's up on your head and 10 G's down on your feet). I was in the process of preparing a short paper on the subject when I received my copy of the March issue of Analog with Jerry Pournelle's novelette, "He Fell into a Dark Hole." I had been beaten into print! I want to congratulate Jerry on the relative accuracy of his scientific extrapolations, especially since the story was written two years ago when we knew a lot less about Black Holes. I hope he writes a lot more in the same vein.

ROBERT L. FORWARD
Hughes Research Labs
Malibu, California 90265

Then there are those good-hearted souls among you who have written in to tell us we're doing a good job . . .

Dear Mr. Bova:

. . . Just finished William Tuning's "Survivability" (May issue) and now that the convulsive laughter has at last subsided, let me say thank you for more fun than literature has provided for a long time.

Actually, this letter has been building up for a bit. April's "Earthquake" was marvelous as well. Glad to see Ron Goulart and Fritz Leiber aren't the only writers with a patent on adroit humor.

But far and away the finest thing I've read in a long while was Poul Anderson's "People of the Wind" (February thru April issues). Great science fiction. Real characters. Sensitive, adept handling of plot and personalities. Truly enjoyable. And most thought-provoking. Many thanks!

LAURIE A. GORTON
701 Pirate Island Road, Apt. 210
Madison, Wisconsin 53716

Dear Mr. Bova:

I must take exception to Bob Werner's letter in the April 1973 issue, about "Conley's sophomoric humor" and "schoolboy gags." There's little enough humor in science fiction; a story based on gags is better than no humor at all . . . It makes no difference to me how much intellectual content there is in a humorous piece, as long as it makes me laugh. Isn't that what humor's for? Conley's story made me laugh. A lot.

ROBERT G. WIRTH
3431 Colfax Avenue North
Minneapolis, Minnesota 55412

Dear Ben:

"Integration Module" (January issue) is the kind of story I enjoy most—and usually find between the covers of Analog. It is thoughtful and stimulating, beautiful and moving . . .

The delicious irony of Mr. Ito's gold brick (in "A Thing of Beauty") was as refreshing as a flurry of snow

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or a sip of chilled champagne . . .

The ending to "Cemetery World" left me singing, "Is that all there is?" And then came the answer, "Maybe . . ."

Thanks to you and John Campbell, *et al.*, for many years' enjoyable, informative, challenging and inspiring literature.

ROGER L. P. SMITH
1830 Magazine Street
Vallejo, California 94590

. . . and those who think we should get other jobs!

Dear Mr. Bova:

It seems apparent that you are a good guy as well as a science-fiction writer. Now, however, it is time to turn into an exacting editor. Campbell kept Analog at the top by rejecting or requiring rewrite on all stories not up to his standards. He rejected stories by some first-class, well-established authors who had become a little careless.

Analog is now including stories that are trash even by comic book standards. For example, "Trade-off" in the February issue was a story wherein containers of industrial wastes (stored in 1927 yet!) broke and released poison that was *alive* and *grew,* poisoning everything and dooming all life within months. The only solution was to use H-bombs to kill the wastes. Russia, however, not being concerned with its imminent doom, would use such bombing as a pretext for World War Three. Either this sorry tale ended without conclusion or else the typesetter dropped off the last pages.

A science-fiction story must use a rationale for violating the rules of established science. Future science or even magic can be postulated, but *some* postulate must be used which holds consistence throughout the story. As editor it's your responsibility to see that the stories are well written, entertaining, and logically consistent within the postulated parameters . . .

RADFORD M. CARROLL
169 Northwestern Avenue
Oak Ridge, Tennessee 37830

Dear Mr. Bova:

. . . I'm not going to try to define SF, but to pin things down a little let's say that whatever gets published in the SF magazines is speculative fiction and what gets published in Analog is science fiction. According to your comment in the April Brass Tacks, the emphasis is placed on science. That I think, is a grave mistake on your part, Mr. Bova; one that your predecessor made as well, which leads to drivel such as Tom Purdom's "Moon Rocks" in the April issue.

This story has to be the worst I've read in Analog in some time, at least since Mack Reynolds' last serial. First, the situation of the story is unlikely. There is no evidence that gold exists on the Moon in any large quantities; even with some sort of space shuttle the cost of returning a payload to Earth will be higher than $7.50 per pound and the chances of five nations being willing or able to mount a large-scale lunar exploration program are even less likely. Finally, there is little chance that gold will

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be an important medium of exchange in the fairly distant future. The present world financial crisis should convince anyone with any knowledge of economics of the need to reduce the importance of gold in the world economy.

Yet I could put up with all this if at least there was one redeeming gleam of merit in the writing of the story. But if there is I missed it—and I read it through four times (four times too many) just to make sure before I wrote this . . .

Sadly, the other stories in the April issue were hardly any better; full of shopworn clichés, cardboard characters and hackneyed ideas. Even the scientific content of "Earthquake" couldn't overcome the lack of originality in the telling of the story. Analog has been full of hardly competent hackwork recently and the occasional exceptions only make the problem more obvious. I must admit the serials have been better; at least the longer length gives the author a chance to add some depth to the story . . .

One of the functions of an editor should be to inform his writers of the rudiments of the art of writing if they aren't already aware of them. By not doing this and continuing to publish mediocre stories, excellent though their science content may be, you add more bricks to the well of the literary ghetto that must be broken down if SF and magazines like Analog are going to survive in the future.

KEITH SOLTYS
155 Lake Street, Upper Apt.
St. Catharines, Ontario

Finally, there are those of you who have a word or two to say about your fellow readers . . .

Dear Ben:

I suppose you're used to getting gripe mail by now, but this is a bit original in that I'm griping about your Brass Tacks column. What I don't like about it: letters on the factual articles and essays far exceed what little is said about the fiction in your magazine. I'm not downgrading the fact articles you publish . . . but I do think the fiction deserves more comment . . .

ROY J. SCHENCK
R.D. #1
Canisteo, New York 14823

Dear Mr. Bova:

. . . I'm writing in to gripe about the gripers which, I suppose, puts me in the category I'm about to deplore.

Do you realize, Mr. B., that about seventy percent of the letters you printed in the last half of 1972 were from people bitching their heads off about something. A goodly portion of the remaining thirty percent weren't really what I'd call unqualified praise. What kind of company am I keeping as a science-fiction fan? Nit-picking fuss-budgets and blue-nosed prudes are not my kind of people. Shouldn't we fans, as a group, be tolerant, open-minded, imaginative, free-thinking, future-oriented types? I try to be that way. Somebody out there in Analog-readerland, please tell me I'm not alone . . .

JO ANNE SILBERNAGLE
1302 East Division Street
Faribault, Minnesota 55021

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EDITORIAL
continued from page 9

erly explains what happened. In other words, God didn't just open a path in the Red Sea for the fleeing Israelites; a team of extraterrestrial engineers decided to help the Jews. Yet the writer is also saying that he believes such an event actually happened, that the mythological tales of the Bible are literally real, and therefore must be explained in terms that a modern person can accept.

Dostoevski's Grand Inquisitor, in "Crime and Punishment," said that all human beings need "miracle, mystery, and authority." The Bible provides all three, woven together. Science tries to understand the miracles, clear up the mysteries, and make man himself responsible for his own actions—the authority of a god (and the associated authority of the state) is replaced by individual responsibility.

And there we have the crux of the problem. Who is responsible for my actions? Am I a puppet being pulled by heavenly (or hellish) strings? Am I a puppet being cleverly manipulated by behaviorist psychologists or implacable socio-economic forces? Or am I an individual with a range of free action open to me? And if so, how wide is that range?

Most religions ultimately place their god at the center of every human being's behavior: either you walk in the ways of the Lord, or you are damned. In other words, either God is guiding you or the devil is.

Those science-fiction stories that attempt to "explain" the myths of the Bible end up merely by replacing the Bible's well-thought-out structure with other gods: alien races, natural forces, coincidences.

Modern science is showing us that we may not have the total and complete freedom of action that we once thought we did. But still, our range of individual free choice is enormously wide. And the more we know about our physical and psychological limitations, the more we can do about overcoming them. No man can fly to the Moon or even lift himself off the ground by muscle power alone. But when man decided he was meant to fly, he didn't grow wings, he invented aerodynamics and rocketry.

In the subtler fields of ethics and social behavior, we find that man's choice of actions is not truly unlimited. Yet we dare not abandon all responsibility for our actions and behave irrationally. There are names for people who act that way; and places in which to put them.

Down at the core of man's striving for understanding, we have the conflict between the religious and scientific approaches. Religion says all the answers are known and the universe is being run by a super-

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being. Science says the answers are largely unknown, but knowable, and it looks like we're on our own.

We learn through the clash of ideas. Both religion and science have much to tell us, and every human being should be free to choose for himself how much weight he gives to each approach.

The frightening thing about the California biology text situation is that it raises the specter of narrow-minded bigotry that always tries to drive competing ideologies out of the society. Scientists have been accused of having just this attitude. But a study of history will show that it's the religious zealots—who are convinced they have *the* answer—who close their minds to all other ideas.

One of the saddest accomplishments of the Roman Catholic Church, once it became the official state religion of the Roman Empire, was to close schools that were not Church supervised. The famous Academy of Athens, seat of the accumulated wisdom of Socrates, Plato, and Aristotle, was shut down. The Dark Ages were not far off.

Could it happen today? With all our vast knowledge and instant electronic communications? Certainly. As one writer put it decades ago, instant communications means that the village idiot can be heard around the world with the speed of light, if you give the village idiot the microphone.

If this kind of thinking has gained a toehold in California schools, it's a giant step backward for American education.

THE EDITOR

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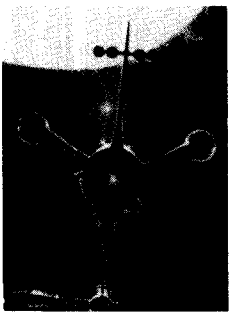

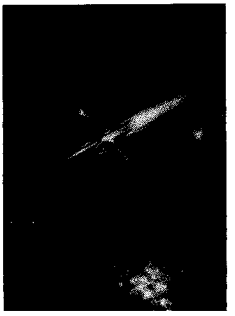

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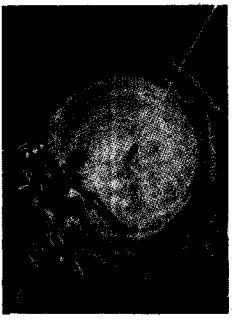

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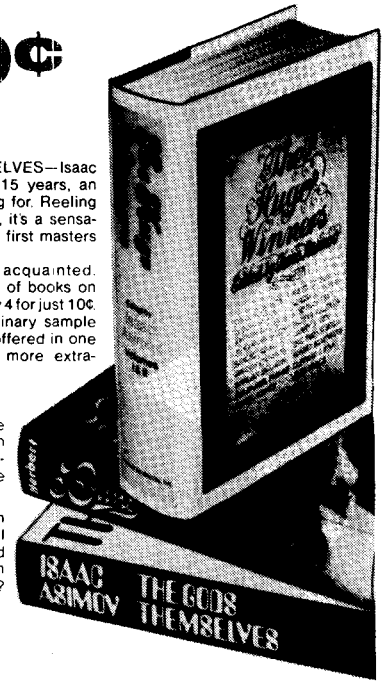

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